# AN INTEGRATED MODEL FOR

# INTERNET BANKING ACCEPTANCE

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## ABSTRACT

This study focuses on the factors affecting Internet banking usage. Basing on the Technology Acceptance Model, an expanded model consisting of a number of factors which are hypothesized to have significant relationship with Internet banking usage were studied. A survey was conducted to collect the data required for this study through a structured questionnaire. A total of 167 usable responses were obtained. Research findings demonstrated that while the list of factors including task ambiguity, information richness, task-technology fit constituted by task ambiguity and information richness, accessibility, privacy, personalization and alliance service, had significant relationship with Internet banking usage working through perceived ease of use or perceived usefulness, the two key determinants on Internet banking usage were information richness and accessibility.

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# CHAPTER I

## INTRODUCTION

Internet has been turning into the most important distribution channel for the products and services offered by various businesses into the marketplace. In order to sustain businesses' competitiveness, the traditional approach of "bricks and mortars" is being transformed into or integrated with "clicks and mortars" under the recent emergence of "e-commerce" and "e-business". Needless to say, the banking service sector is facing the same challenge.

In the last couple of years, more and more banks in Hong Kong are expanding their banking services into the platform of Internet, though the development of Internet banking in Hong Kong is still lagging far behind the United States. Beyond doubt, different banks are capitalizing Internet banking for different competitive strategies, which include: cost containment, performance improvement, market penetration and product transformation [3]. In other words, banks themselves are clear about the trend and need to deliver their services onto Internet to save their operation cost and give them competitive edge.

However, these banks all share the same challenge for the success of these competitive strategies of Internet banking, which is the need for a critical mass of customers using their Internet banking services. It is equally important, if not more important, for banks to know how their customers value the Internet banking services

in order that they will be able to do planning and capture the market. In other words, it is very important for banks to know what factors will affect customers to decide using Internet banking so that basing such vital knowledge, banks can design effective strategies for attracting Internet banking customers. Hence, this research will focus on studying the factors affecting Internet banking usage.

Although the acceptance of information technology or information system by users has, for quite a long time, been an important area of study of the MIS researches, so far few studies have been done on users' attitudes or acceptance toward products or services under e-commerce or e-business. This study is somewhat the first of its kind presenting a research model studying factors affecting customers' acceptance of an e-commerce product, that is the Internet banking.

As mentioned earlier, the main objective of this research is to find out the factors contributing to Internet banking usage. Basing on the Technology Acceptance Model (TAM), an expanded model consisting of a number of factors, which are hypothesized to have significant relationship with Internet banking usage, would be studied in the research. Basically, this research is expected to make contributions in the following areas:

1. to find out a number of factors which are proved to have significant relationship with Internet banking usage;
2. to make recommendations to managers of the banking service sector on the effective strategies of developing Internet banking as a new distribution channel of banking services, basing on the research results;

3. to make recommendations to researchers on future research areas as well as relevant methodological issues; and
4. to put up an expanded TAM model worthy of further research efforts on its reliability and validity.

Besides this introductory chapter, this paper consists of the following parts:

- Literature Review
- Research Model
- Research Methodology
- Research Results
- Discussion of the Research Results
- Implications to Managers and Researchers
- Conclusion

# CHAPTER II

## LITERATURE REVIEW

The acceptance of information technology (IT) or information system (IS) by users has become an important part of management information system (MIS) research literature. It is considered an important condition for the successful implementation of IT.

The Technology Acceptance Model proposed by Davis [14,15], derived from the theory of Reasoned Action (TRA), is well known and widely accepted in MIS literature. It posits that two external variables, namely perceived usefulness (PU) and perceived ease of use (PEOU) are the primary constructs determining attitude toward an IT, intention to use and actual usage. Thus TAM is not specific to any IT system or product, and has been used extensively in other researches. The two constructs are generally confirmed to be important factors in affecting system usage [6, 18, 25].

Recently general Internet usage was investigated using the TAM. The findings of the study demonstrated that while PU had consistently strong effects on all Internet usage dimensions (frequency of Internet usage, daily Internet usage and diversity of Internet usage), PEOU and perceived enjoyment affected each specific usage dimension differently. The results also showed that PEOU could influence Internet usage dimensions through their effects on PU and perceived enjoyment [26].

Substantial research efforts have been spent to extend TAM to explore factors affecting PU and PEOU.

Dishaw and Strong extend the technology acceptance model with task-technology fit (TTF) constructs [16]. The concept of fit is common in organizational theories [27, 28] and also appears frequently in MIS literature. It refers to the extent of matching or congruence between a technology and a task. That is, the extent to which a particular task can be performed effectively and efficiently with a particular technology. Dishaw and Strong believe that the two models, the TAM and TTF, provide a much needed theoretical basis for exploring the factors that explain software utilization and its link with user performance. These models offer different overlapping perspectives on utilization behaviour. TAM focuses on attitudes toward using a particular IT which users develop based on PU and PEOU of the IT. TTF focuses on the match between user task needs and the available functionality of the IT. Finally, Dishaw and Strong propose an integrated model, which is an extension of TAM to include TTF constructs [16]. Along the same line, Mathieson and Keil posit that the fit between the technology and tasks can affect PEOU [21]. They support that PEOU is an important factor in determining whether an individual will voluntarily use an IS. But they also point out that while many developers focus their attention on the system's interface for PEOU, for users, however, PEOU can extend beyond the interface. Basing on the results of a laboratory experiment, it is confirmed that PEOU is also a function of task/technology fit. When users report that a system is difficult to use, developers should not assume that the interface is the problem. There may be deeper task/technology fit issues that are not corrected by changing the interface [21].

As said before, there is growing attention put on the TTF as a supplement to the TAM in explaining acceptance of IT or IS. Closely related to the concept of task-technology fit is the information richness of the information technology. Information richness is the information carrying capacity of the communication medium to transmit non-figure information such as facial expression, direction of looking, posture, and non-verbal cues. In this regard, face-to-face communication is richer than written electronic mail. Information richness theory [4, 13] posits that one would choose a communication medium by matching the information requirements of the task to the information richness of the medium. For non-routine task, which is high in uncertainty and ambiguity (e.g. negotiation), end user would choose rich channels. For routine tasks, simpler channels would suffice. Karahanna and Straub have used these arguments in extending the TAM model to study the psychological origins of PU and PEOU [19]. Moreover, they also argue that accessibility, which means physical access to the information technology, will directly affect PEOU.

While the afore-mentioned discussions focus on the user's acceptance with respect to their existing tasks and environment, the innovative impacts of IT should also be examined. Hirschhorn [5] contends that IT is used in new ways that have decisive implications on general life. In other words, in addition to what is done, it is also necessary to study what can be done in order to have a more complete picture of the impact of IT. Therefore, IT could enable new ways of doing things, which in turn, would increase values to users and affect their PU of the IT. Such factors including accessibility, privacy, personalization and alliance service have been proposed in some literatures as positively related to PU of IT or IS.

By interviewing over one hundred individuals about all the pros and cons of using Internet commerce that they experienced or envisioned, Keeney [20] found a number of fundamental objectives that were influenced by Internet purchases. These objectives include product time utility, convenience, and privacy. Time utility refers to reduced time spent to find and receive product/service. Convenience refers to purchasing convenience & flexibility, after-sales service and reduced effort of shopping. Privacy refers to protection of personal data.

Accessibility is a multidimensional concept and Culnan points out that perceptions of accessibility are moderated by prior experience with the source and contextual factors [12]. On the other hand, Rice and Shook further suggest that greater accessibility would result in more usage of IT and reported increases in effectiveness [22].

With the interactive feature of browser and its global reach, Internet is considered a good platform for implementing one-to-one marketing and customer relationship management. Dysart views that the most successful Internet platform will be one that can offer each visitor a highly personalized interactive experience [17]. The web site should be designed around an action-driven interactive paradigm, in which every element of the site blends together to enable a visitor to quickly accomplish a task. This means that individual customer information can be collected and the product/service mix can be customized for individual customer needs. Put it in a simple way, the Internet marketplace supports personalization and customization in two ways: First, consumer tracking technology allows the identification of

individual buyers; and second, information-rich products lend themselves to cost-effective customization [11].

Specifically to Internet banking, Rubin points out that new web-based technologies are enabling banks to provide customized content that can educate and cross-sell, while strengthening the long-term relationship between bank and customer [23]. Such personalization and customization can offer much convenience to customer and are generally believed to have direct association with users' PU. For customers, Internet represents anytime, anywhere banking. For bankers, dynamic personalization and customization represents anytime, anywhere relationship building [23]. Some Web sites, like Amazon, have started implementing this kind of personalized service.

Internet is also a ubiquitous and low-cost platform for implementing inter-organizational system [1]. Through alliances with other organizations, a range of new services transcending organizational boundaries can be offered to users. Given customer needs and the inter-organizational integration attribute of Internet, the sources of differentiation for banking services are: product; price/return; track record; brand; convenience; customer service; impartiality; on-line opportunities. Moreover, the allied financial service products can include: cheaper niche products; cross-border selling; selling knowledge; payments; customer relationships; new markets [3]. Such alliance services are expected to influence Internet usage through the effects on PU.

An example illustrating the concepts of personalization and inter-organizational services enabled by Internet, is the portal site Quicken.com

(www.quicken.com). This site has collaborated with many banks, credit card issuers, insurance company, market information provides and even bookstore Amazon.com to provide integrated as well as personalized financial planning and advisory services. Customers can track their own investment portfolio as market prices fluctuate, know their bank and credit card accounts movement online as well plan and apply mortgage and insurance suitable to their own needs.

Finally, although that there is little literature discussing users' acceptance towards Internet banking, basing on past researches, a model combining the TAM and the TTF can be used to study the factors affecting Internet banking usage. Moreover, some literatures have also provided the ground for hypothesizing the existence of significant relationship between certain variables and PU of Internet banking usage.

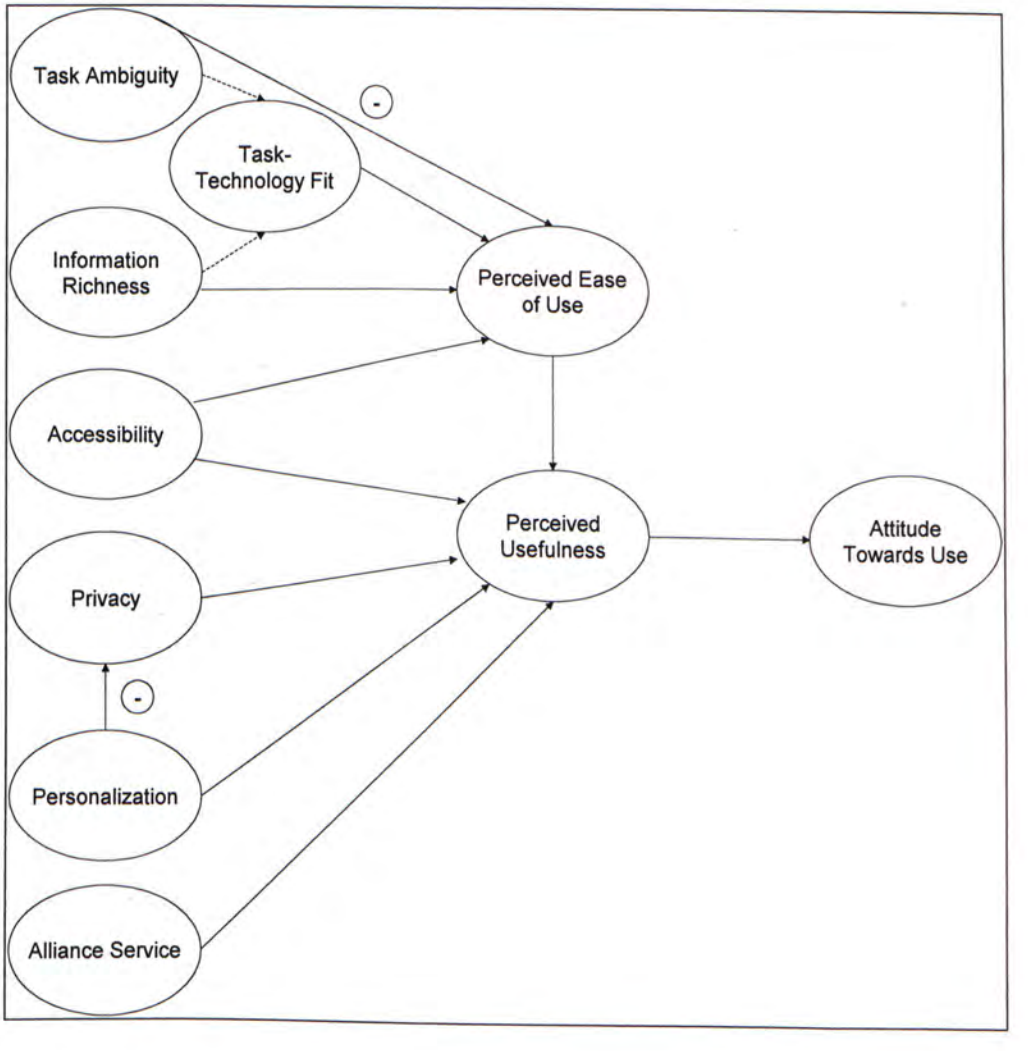
# CHAPTER III

## RESEARCH MODEL

Our research model aims at extending the Technology Acceptance Model (TAM) to explore external variables influencing perceived usefulness (PU) and perceived ease of use (PEOU) in the context of Internet Banking usage. Based on an extensive review of related literature, the model depicted in Figure 1 is postulated:

FIGURE 1

RESEARCH MODEL



Instead of directly using Internet banking usage as the dependent variable of the research model, attitude towards use is used.

Bagozzi and Yi [9] demonstrate that only when intention to use is well formed does it completely capture the effect of attitude on actual usage. If intention is poorly formed, attitude will thus have a direct effect on usage. The same direct effect between attitude and usage occurs when behavior requires low-to-moderate effort [10]. Apparently, these conditions causing direct relationship between attitude and usage would be met in situation where the use of IT firstly, is not mandated and secondly, the usage requires low-to-moderate effort. Similar findings of attitude predicting computer usage are also found by Winter, Chudoba, and Barbara [30]. The same findings are also suggested in the research done by Al-Gahtani and King on attitudes, satisfaction and usage as factors contributing to each in the acceptance of IT [7]. As Internet banking is certainly not mandated and it would not be difficult to operate the point and click browser interface, it is contended that the intention construct is dropped and attitude has direct effect on usage. Furthermore, since Internet banking is still in its infancy stage in Hong Kong at the time of conducting this research, the number of banks offering Internet banking services is still limited and usage is not common yet. Hence, the research model includes up to the attitude construct. It is contended that attitude would predict the actual usage when the supply of Internet banking services becomes more common.

Mathieson and Keil posit that the fit between the technology and tasks can affect PEOU [21]. For Internet banking, the banking tasks can widely range from

simple account balance inquiry to complicated mortgage and investment services. On the other hand, multi-media enabled browser technology would offer a richer medium for Internet as an operating platform than phones and automatic teller machine. The two constructs of ambiguity (of existing banking tasks) and information richness (of Internet) would constitute task-technology fit. The three constructs of task ambiguity, information richness and task-technology fit would affect PEOU.

The accessibility construct is a multi-dimensional one in the context of Internet banking. It refers to not only physical accessibility of Internet connections but also the global and round-the-clock nature of Internet banking. As suggested by Karahanna and Straub, accessibility affects PEOU positively. In addition, accessibility offers values to users of Internet banking in terms of time utility and convenience. Rice and Shook recommend that greater accessibility had direct influence in reported increases in effectiveness, a concept that is in fact closely related to PU of IT [22]. Thus, the model also postulates a positive effect of accessibility on PU.

Security is long considered an important issue in Internet commerce. In this connection, the protection of privacy has always attracted the most attention. Privacy is defined as the right of individuals to control the collection and use of personal information about themselves. Therefore, privacy affects PU positively in the sense that higher security level offers more values to customer. In another sense, the self-service Internet banking transfers control of transaction to customer. This sense of privacy reduces personal hassle, offers convenience value, and therefore affects PU positively.

Personalization means the level of customized service tailored to individual customers. As discussed, personalization offers convenience values. The customer needs not tell the bank his or her needs and preferences every time when doing banking tasks. After-sales service would also be facilitated through personalization. Hence personalization is postulated to have a positive effect on PU. Nonetheless, the effect of personalization is moderated by privacy. Personalization requires collecting personal information and tracking personal usage, thereby to certain extent endangering the protection of privacy of individual customer dealing with the bank. Therefore, it is contended that personalization has a negative effect on privacy.

Finally, the construct of alliance service means the level of cross-organizational services offered to customers via alliances among services rendered by various organizations with the bank's web site acting as the single point of access. This construct reflects the advantage of Internet as an inter-organizational system platform and offering added values to customers. Customers can complete a whole task in one stop, in contrast with visiting multiple organizations in the past. There are much convenience and time utility values offered to customer. An existing example of such service is bill payment to a whole range of different companies at one stop. Therefore, it is contended that alliance service has positive impact on perceived usefulness.

To sum it up, the research model of this study, which consists of ten constructs, presents the following research hypotheses:

H1: Task ambiguity is negatively related to PEOU.

H2: Information richness is positively related to PEOU.

H3: Task-technology fit, constituted by task ambiguity and information richness, is positively related to PEOU.

H4: Accessibility is positively related to PEOU.

H5: Accessibility is positively related to PU.

H6: Privacy is positively related to PU.

H7: Personalization is negatively related to privacy.

H8: Personalization is positively related to PU.

H9: Alliance service is positively related to PU.

H10: PEOU is positively related to PU.

H11: PU is positively related to attitude to use.

# CHAPTER IV

# RESEARCH METHODOLOGY

Basically, the research is a sample survey conducted with a structured questionnaire. The methodological issues related to the survey are discussed as follows:

## Subjects

The subjects for the study were general banking customers using certain banking services. All current part-time MBA students, and a few classes of the post-graduate diploma students in MIS of the CUHK were included as samples of the survey and invited to fill in the questionnaire.

## Data Collection Procedures and Validation of Questionnaire

The data were collected using self-administered questionnaires to the subjects. The questionnaire was pre-tested with 11 customers for content validation, which resulted in removing some unclear questions and re-wording others. The revised questionnaire (listed in Appendix 1) was then used in the survey.

Participants in the survey expressed the extent of their agreement on statements about the constructs of perceived ambiguity of their banking tasks, perceived information richness of Internet banking, perceived accessibility of Internet banking, perceived personalization and perceived alliance services offered by Internet banking as well as the perceived ease of use, perceived usefulness and their attitude

toward use of Internet banking. They stated their extent of agreement using a seven-point, Likert scale (from 1 = "strongly disagree" to 7 = "strongly agree").

## Operationalization and Measurement of Variables

As much as possible, the questionnaire items for each variable were taken or modified from previous studies to improve reliability. For those variables without reference, the questions were designed with reference to their meanings or definitions discussed in previous studies.

The published questions in previous surveys for attitude toward use, perceived ease of use, perceived usefulness and information richness were used directly with minor changes to reflect the Internet banking under study.

Questions used in this research for attitude toward use took reference from Al-Gahtani and King's study on "Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology" [7]. Questions for PEOU and PU were from the study by Teo, Lim, and Lai on "Intrinsic and extrinsic motivation in Internet usage" [26]. Questions for information richness were from Zmud and Carlson's survey entitled "Channel Expansion theory and the Experiential Nature of Media Richness Perceptions" [31].

For task ambiguity, which means "cannot be objectively analyzed and understood", the questions for task analyzability were used and scores were inverted to obtain measurement of banking task ambiguity [13]. That is, the lower the score of analyzability, the higher the score of ambiguity. "Strongly agree" on analyzability

corresponded to "strong disagree" on ambiguity, "agree" corresponded to "disagree", "slightly agree" to "slightly disagree", so on so forth.

Culnan postulated different dimensions for the construct of accessibility. The factors in physical accessibility were used to operationalize the questions for measuring accessibility, namely physical connection, locating the functions (i.e. banks' web site) and length of waiting time. In addition, two questions were added to include measurement of the global and round-the-clock nature of Internet banking.

For the variables of privacy, personalization, alliance services, questions were operationalized according to their definitions and meanings discussed in previous studies.

Privacy is generally defined as the right of individuals to control the collection and use of personal information about themselves. People are becoming more and more concerned about information privacy and the right to it because advances in information technology has caused increasing ability of businesses and organizations to gather so much information on individuals. In this regard, the variable of privacy was measured in this survey by the questions on personal information protection as well as control on collection, use and misuse of personal information in Internet banking.

Rubin posited that the new information technologies have the potential to boost the return on a bank's investment in Internet banking by providing customized content that can educate and cross-sell, while strengthening the long-term relationship

between bank and customer [23]. To Rubin, personalizing the Internet means to deliver targeted, relevant and timely marketing messages and product information to customers; to take information culled from the customer's web site visits and combine it with other data sources to craft targeted messages to each customer; to interact one-to-one with customers in a relatively cost-effective manner; to record how often the customer accesses the site, which pages were accessed and for what duration by using observation engines; or to personalize page presentation, messages delivery closely aligned with customer's need. Basing on the elaboration by Rubin on the meanings of personalizing the Internet, in this survey, for personalization, questions were designed to measure the perceived extent of Internet banking on customized presentation, customized content, personal message delivery, tracking individual access duration and pattern, inference on individual banking behaviours and preference as well as tailor-made offerings on product/service.

Finally, the inter-organizational attribute of Internet banking creates for itself the competitive advantage of offering alliance services to customers. More specifically, Vitale pointed out the following benefits brought by alliance services: increased product differentiation; reduced search-related cost; vertical integration without actual ownership of other organizations; lower cost of shopping via links to suppliers; improving customers' ability to shop for a third-party product; getting the best available prices on purchased commodity materials [29]. In the light of these meanings of alliance service, the questions on alliance services in the survey measured reduced information searching cost, integration of services across organizational boundary, one-stop services, expanded and differentiated services enabled by banks' system integration with third parties over Internet.

The task-technology fit was computed by matching individual subject's average response to task ambiguity and average response to information richness, using the deviation score approach. The approach was based on calculating the absolute difference (rounded to the nearest integer for the sake of statistical analysis) between the average scores of task ambiguity and information richness, i.e. | task ambiguity – information richness |. Any calculated non-zero value indicated the lack of fit between task ambiguity and information richness. Moreover, the greater the value was, the less fit between task ambiguity and information richness for that respondent. Such computation approach is common in the literature [16, 28].

## Statistical Techniques Used in Data Analysis

For the data collected, the following statistical techniques were used for the analysis:

- Factor Analysis: to test the reliability of the research model
- LISREL: to test the validity of the research model
- Chi-Square Statistic: to test the goodness of fit of the research model
- Regression: to find out the relationship between the dependent and independent variables

# CHAPTER V

# RESEARCH RESULTS

## Respondents' Profile

A total of 167 answered questionnaires were collected. The participated subjects carried a variety of demographic backgrounds. They ranged in age groups from 21-25 to above 45, with a median age group of 26-30. Distribution of gender was quite balanced, with 68 of them (40.7%) being female.

Respondents' monthly income ranged from less than HK$10,000 per month to over HK$60,000 per month, with a median group of HK$20,001-30,000. They had a variety of occupations such as accountant, information technology, sales, banking, business consulting, civil servant, doctor, marketing, education, telecommunications, social work, secretary and engineer.

Though only 13 of the subjects (7.8%) had actually used Internet banking services, majority of them (120 subjects, 71.9%) had experience in using other remote banking services such as telephone banking. All of them also had experience in using Internet. Hence the subjects were familiar with remote banking and Internet.

The four banks used most often by the subjects were, in the order, Hong Kong Bank (71 subjects), Hang Seng Bank (61 subjects), Standard Chartered Bank (15 subjects) and CitiBank (12 subjects). This distribution in the sample was quite

representative of the retail banking market in Hong Kong – over 50% market share was captured by Hong Kong Bank and Hang Seng Bank. As the two banks did not provide any transaction banking services on Internet at the time of the research, the result of low portion of Internet banking experience in the subjects were considered unavoidable. However, as mentioned in the Chapter of Literature Review, for such relatively new service, attitude should have predictive power towards acceptance. Hence the fact of low actual experience in using Internet banking should not have adverse effect on the study.

With the subjects' diversified and balanced backgrounds, familiarity with the topic under study and representative sample of retail banking market in Hong Kong, empirically, there should not be significant response bias affecting the study.

## Structural Equation Model

First, the result of Cronbach Alpha for testing reliability of the operationalized measurement items of each construct are presented. Second, confirmatory factor analysis (CFA) exploring the overall measurement properties of the model and discriminant validity as well as the result of exploratory factor analysis (EFA) are presented. Third, the results of the structural equation modeling used to test the relationships among the constructs is reported.

### Measurement Items Reliability

SPSS 8.0 was used for the Cronbach Alpha analysis of the measurement items for each construct in the model, with the responses to the corresponding questions as input.

Except the constructs of information richness and accessibility, almost all constructs had Cronbach Alpha exceeding 0.7, indicating quite a good level of reliability. The Cronbach alpha of two constructs of information richness and accessibility could be made close to 0.7, that is, 0.6410 and 0.6442 respectively after excluding responses to questions 7 and 10 in the questionnaires. Referring to the questionnaire itself, the wordings of these two questions appear more difficult to understand than the other questions in the constructs. Hence the responses to these two questions were excluded in subsequent analysis.

## Confirmatory Factor Analysis of the Measurement Model

LISREL 8.30 was used for the confirmatory factor analysis with the covariance matrix of the responses to the questionnaires as input.

During initial analysis, the variance extracted for some measurement items were rather low, that is, below 0.5. These are summarized in the Table 1, together with the justification for the small variance extracted and excluding them in subsequent analysis.

TABLE 1

MEASUREMENT ITEMS WITH LOW VARIANCE EXTRACTED

| Construct | Questions No. | Justification for small variance extracted and exclusion in subsequent analysis |
|---|---|---|
| Information Richness | 6 | After removing that question, the remaining questions 4 and 5 are concentrated on the interactive nature of information richness |
| Accessibility | 8<br>9 | Questions 8 and 9 measured ease of finding the Internet banking physically whereas the remaining ones (10, 11) measured accessibility at a higher level in terms of time and global convenience. |
| Personalization | 13<br>14<br>15 | Questions 13 and 14 asked about customers' own customization of bank's the web page and 15 about personal message delivery. Using only questions 17 to |

| | | |
|---|---|---|
| | 20 | 19 in the analysis concentrated on how banks can record the users' access pattern and personalize their pages automatically, which was a higher level form of personalization than customers' own customization. Moreover, question 20 appeared rather clumsy compared to other questions of the construct. |
| Alliance Service | 25<br>26<br>30 | Question 25 and 26 asked about information searching. Excluding them would concentrate on measuring perceived service offered. Question 30 was just similar to 29. |
| Perceived Usefulness | 38 | Question 38 appeared more difficult to understand than the others of the construct |

After excluding the items in Table 1, the CFA estimated exhibited an acceptable level of fit for the measurement model. Chi-square was 698.69 with degree of freedom of 289 and p-value smaller than 0.01. Root mean square error (RMSEA) was 0.092. Goodness of fit index (GFI) was 0.76, adjusted goodness of fit index (AGFI) was 0.69, normed fit index (NFI) was 0.81 and comparative fit index (CFI) was 0.86. The variance extracted for all observed variables exceeded 0.5, ranging from 0.54 to 0.98. The average variance extracted for each construct all exceeded 0.5, ranging from 0.58 to 0.89. Table 2 shows the construct intercorrelations as well as the final Cronbach alpha and average variance extracted for each construct. In addition, the detailed result of the CFA is listed in Appendix 2.

TABLE 2

CONSTRUCT INTERCORRELATION AND FIGURES

| Construct | Cronbach Alpha | Average Variance Extracted | Construct Intercorrelation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
| 1. Task Ambiguity | 0.81 | 0.67 | 1.00 | | | | | | | | |
| 2. Information Richness | 0.69 | 0.58 | -0.37 | 1.00 | | | | | | | |
| 3. Accessibility | 0.69 | 0.60 | -0.36 | 0.48 | 1.00 | | | | | | |
| 4. Personalization | 0.89 | 0.74 | -0.50 | 0.47 | 0.27 | 1.00 | | | | | |
| 5. Privacy | 0.92 | 0.89 | 0.20 | 0.21 | 0.07 | 0.03 | 1.00 | | | | |
| 6. Alliance Service | 0.89 | 0.77 | -0.33 | 0.43 | 0.38 | 0.52 | 0.22 | 1.00 | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7. | Perceived Ease of Use | 0.85 | 0.70 | -0.30 | 0.69 | 0.49 | 0.45 | 0.27 | 0.55 | 1.00 | |
| 8. | Perceived Usefulness | 0.92 | 0.74 | -0.11 | 0.64 | 0.37 | 0.51 | 0.38 | 0.59 | 0.86 | 1.00 |
| 9. | Attitude | 0.94 | 0.88 | -0.06 | 0.61 | 0.47 | 0.37 | 0.35 | 0.45 | 0.75 | 0.76 | 1.00 |

Table 3 shows the factor loadings from the constructs to measurement items.

TABLE 3

CONFIRMATORY FACTOR ANALYSIS FACTOR LOADINGS

| Construct | Measurement Item* | Factor Loading |
|---|---|---|
| Task Ambiguity | TA1 | 0.82 |
| | TA2 | 0.87 |
| | TA3 | 0.75 |
| Information Richness | I4 | 0.78 |
| | I5 | 0.74 |
| Accessibility | A11 | 0.73 |
| | A12 | 0.81 |
| Personalization | P16 | 0.82 |
| | P17 | 0.88 |
| | P18 | 0.88 |
| | P19 | 0.87 |
| Privacy | PR22 | 0.99 |
| | PR23 | 0.91 |
| Alliance Service | AS27 | 0.87 |
| | AS28 | 0.89 |
| | AS29 | 0.88 |
| Perceived Ease of Use | EOU31 | 0.79 |
| | EOU32 | 0.81 |
| | EOU33 | 0.91 |
| Perceived Usefulness | PU34 | 0.81 |
| | PU35 | 0.84 |
| | PU36 | 0.91 |
| | PU37 | 0.89 |
| | PU39 | 0.84 |
| Attitude | AT40 | 0.92 |
| | AT41 | 0.96 |
| | AT42 | 0.95 |

* The number at the end corresponds to the question no. in the questionnaire

Furthermore, as a test of discriminant validity, the correlation between each pair of constructs was set, one at a time, to 1. In each case, either the solution was found non-admissible or a model of poorer fit (i.e. larger chi-square and RMSEA) was estimated. This confirmed that all the constructs in the measurement model were empirically distinct.

## Exploratory Factor Analysis of the Measurement Model

To supplement the result of confirmatory factor analysis and further assess the reliability of the research model, SPSS 8.0 was used for the exploratory factor analysis with the responses used in CFA as input.

In the initial analysis without specifying the number of components to be extracted, 6 components were extracted. The result of rotated component matrix is summarized in Table 4.

TABLE 4

EXPLORATORY FACTOR ANALYSIS ROTATED COMPONENT MATRIX (NO NUMBER OF COMPONENTS SPECIFIED)

**Rotated Component Matrix[a]**

| | Component | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| TA1 | -9.2E-02 | -.150 | -3.1E-02 | .810 | 6.13E-02 | -8.9E-02 |
| TA2 | 3.76E-02 | -.238 | -.118 | .772 | 9.15E-02 | -.163 |
| TA3 | 3.89E-02 | -.180 | -1.0E-01 | .749 | 8.99E-02 | -3.6E-02 |
| I4 | .479 | .220 | -6.6E-02 | -.340 | .150 | .217 |
| I5 | .557 | -2.8E-02 | 6.18E-02 | -.393 | 5.84E-02 | 1.47E-02 |
| A11 | .235 | -2.2E-02 | .109 | -.173 | .137 | .686 |
| A12 | 9.91E-02 | 5.32E-02 | .102 | -.142 | -7.2E-02 | .841 |
| P16 | .209 | .698 | .294 | -.281 | -6.4E-02 | -4.5E-02 |
| P17 | .212 | .787 | .239 | -.178 | -.162 | .102 |
| P18 | .222 | .834 | .139 | -.163 | 2.78E-02 | 7.54E-03 |
| P19 | .206 | .858 | 2.40E-02 | -.151 | .145 | 3.81E-02 |
| PR22 | .212 | -3.7E-03 | 9.98E-02 | .110 | .914 | 5.65E-02 |
| PR23 | .260 | -1.2E-02 | 5.48E-02 | .106 | .915 | 1.39E-02 |
| AS27 | .243 | .160 | .840 | -6.0E-02 | 3.05E-02 | 9.70E-02 |
| AS28 | .287 | .196 | .819 | -.162 | 9.99E-02 | 5.66E-02 |
| AS29 | .293 | .188 | .803 | -8.4E-02 | 6.19E-02 | .129 |
| EOU31 | .628 | 5.30E-02 | .166 | -.344 | -2.2E-02 | .194 |
| EOU32 | .711 | 7.98E-02 | .215 | -.160 | .179 | 8.40E-02 |
| EOU33 | .788 | .117 | .147 | -.156 | -1.5E-02 | .126 |
| PU34 | .768 | .140 | .192 | 5.39E-02 | 6.64E-02 | -.135 |
| PU35 | .743 | .140 | .249 | 3.12E-02 | .160 | -.140 |
| PU36 | .788 | .205 | .235 | -4.0E-02 | .216 | -7.7E-02 |
| PU37 | .726 | .320 | .296 | 4.14E-02 | .116 | -2.5E-02 |
| PU39 | .820 | .134 | .172 | -3.2E-02 | .104 | .180 |
| AT40 | .764 | .189 | 2.49E-02 | .150 | 9.03E-02 | .309 |
| AT41 | .759 | .159 | 5.53E-02 | .137 | 7.93E-02 | .393 |
| AT42 | .797 | .150 | 6.62E-02 | 7.32E-02 | .115 | .288 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

From Table 4, component 1 had high correlation with measurement items in perceived usefulness, attitude, perceived ease of use and information richness, component 2 had high correlation with items in personalization, component 3 with alliance service, component 4 with task ambiguity, component 5 with privacy and component 6 with accessibility. Therefore, many of the proposed constructs in the

research model emerged as distinct factor. As for the high correlation between component 1 and measurement items of perceived usefulness, attitude, perceived ease of use and information richness, since the result of discriminant validity test in CFA suggested the three constructs were distinct, these facts suggested that, as reflected in the research model, information richness could be an important determinant of ease of use, which in turn affected usefulness and attitude (more to be discussed in the structural model below and discussion chapter). Hence the measurement items of the three constructs had higher correlations as extracted in component 1.

A further analysis of explicitly setting the number of components to be extracted to 9 was performed. The result of rotated component matrix is summarized in Table 5.

TABLE 5

EXPLORATORY FACTOR ANALYSIS ROTATED COMPONENT MATRIX (SET NUMBER OF COMPONENTS TO 9)

**Rotated Component Matrix[a]**

| | Component | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| TA1 | -7.1E-02 | -.157 | 4.29E-02 | -1.2E-02 | .811 | 4.68E-02 | -.107 | -.221 | -6.5E-02 |
| TA2 | 5.51E-02 | -.234 | 3.44E-02 | -.114 | .797 | 7.84E-02 | -.150 | -.109 | -4.1E-02 |
| TA3 | 4.83E-02 | -.150 | -4.1E-02 | -.121 | .821 | 8.85E-02 | 6.14E-03 | .104 | -.122 |
| I4 | .114 | .277 | .197 | 2.50E-02 | -8.2E-02 | .127 | .172 | .255 | .745 |
| I5 | .332 | -2.8E-03 | .190 | .135 | -.201 | 8.69E-03 | 4.07E-02 | 2.18E-03 | .785 |
| A11 | .254 | -5.1E-03 | 7.40E-02 | 5.84E-02 | -.130 | .101 | .846 | -1.9E-02 | .111 |
| A12 | -9.7E-02 | 7.61E-02 | .204 | .111 | -.101 | -6.6E-02 | .823 | .171 | 4.69E-02 |
| P16 | .169 | .716 | 9.64E-03 | .303 | -.203 | -7.4E-02 | -2.7E-02 | 7.86E-02 | .204 |
| P17 | .133 | .801 | 9.87E-02 | .249 | -.124 | -.167 | 9.88E-02 | 7.78E-02 | .136 |
| P18 | .217 | .827 | .126 | .119 | -.197 | 3.41E-02 | 1.26E-02 | 4.72E-02 | -5.5E-02 |
| P19 | .151 | .856 | .141 | 2.24E-02 | -.156 | .149 | 2.18E-02 | 4.41E-02 | 3.06E-02 |
| PR22 | .159 | -1.0E-02 | .145 | .103 | 8.97E-02 | .921 | 3.11E-02 | 1.55E-02 | 1.71E-02 |
| PR23 | .195 | -1.1E-02 | .129 | 5.91E-02 | .119 | .918 | 1.52E-03 | 5.01E-02 | 8.15E-02 |
| AS27 | .174 | .146 | .185 | .865 | -9.5E-02 | 3.98E-02 | 3.65E-02 | 8.99E-03 | 2.82E-02 |
| AS28 | .276 | .212 | 2.18E-02 | .812 | -.116 | 9.95E-02 | 8.57E-02 | .140 | 8.55E-02 |
| AS29 | .206 | .192 | .147 | .819 | -7.1E-02 | 7.25E-02 | 9.16E-02 | .129 | 5.63E-02 |
| EOU31 | .272 | .107 | .268 | .185 | -.217 | 2.90E-02 | .110 | .750 | .159 |
| EOU32 | .603 | .116 | .176 | .171 | -6.9E-02 | .184 | .176 | .430 | .140 |
| EOU33 | .501 | .149 | .372 | .142 | -8.9E-02 | 2.25E-02 | 9.03E-02 | .604 | .100 |
| PU34 | .785 | .121 | .311 | .145 | 1.46E-02 | 4.48E-02 | -2.0E-02 | 1.15E-02 | 9.97E-02 |
| PU35 | .771 | .140 | .211 | .193 | 4.12E-02 | .141 | -3.1E-03 | .115 | .107 |
| PU36 | .808 | .208 | .225 | .172 | -2.4E-02 | .195 | 7.29E-02 | .143 | .124 |
| PU37 | .716 | .324 | .243 | .250 | 6.43E-02 | 9.70E-02 | 9.45E-02 | .116 | .124 |
| PU39 | .537 | .131 | .529 | .188 | -3.7E-02 | .125 | .122 | .316 | .148 |
| AT40 | .346 | .144 | .824 | .101 | 3.50E-02 | .123 | .102 | .105 | .116 |
| AT41 | .292 | .121 | .841 | .138 | 3.47E-02 | .122 | .161 | .190 | .103 |
| AT42 | .390 | .111 | .784 | .141 | -1.2E-02 | .140 | .107 | .113 | .193 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

The results from Table 5 suggested good convergence with the proposed constructs in the proposed model. Looking at the table column-wise, component 1 had the highest correlation with the measurement items in perceived usefulness, component 2 has the highest correlation with items in personalization, component 3

with attitude, component 4 with alliance service, component 5 with task ambiguity, component 6 with privacy, component 7 with accessibility, component 8 with perceived ease of use and component 9 with information richness. This fact suggested that the components matched with the corresponding constructs in the research model and these constructs were distinct. The reliability of the research model was confirmed again.

Looking at the table row-wise, except for ease of use question 32, each measurement item had the highest correlation with the corresponding components associated with the constructs in the model. These facts suggested that the measurement items belonged to the corresponding constructs intended and hence confirmed the reliability of operationalization.

Furthermore, the eigenvalues of the component and associated constructs were all over 1 as summarized in Table 6. Detail results of the exploratory factor analysis are shown in Appendix 3.

TABLE 6

EXPLORATORY FACTOR ANALYSIS EIGENVALUES

| Component | Associated Construct | Eigenvalues |
|---|---|---|
| 1 | Perceived Usefulness | 4.248 |
| 2 | Personalization | 3.153 |
| 3 | Attitude | 3.040 |
| 4 | Alliance Service | 2.641 |
| 5 | Task Ambiguity | 2.282 |
| 6 | Privacy | 1.982 |
| 7 | Accessibility | 1.616 |
| 8 | Perceived Ease of Use | 1.542 |
| 9 | Information Richness | 1.479 |

With the reliability and validity of the measurement model being confirmed, the structural equation analysis was performed.

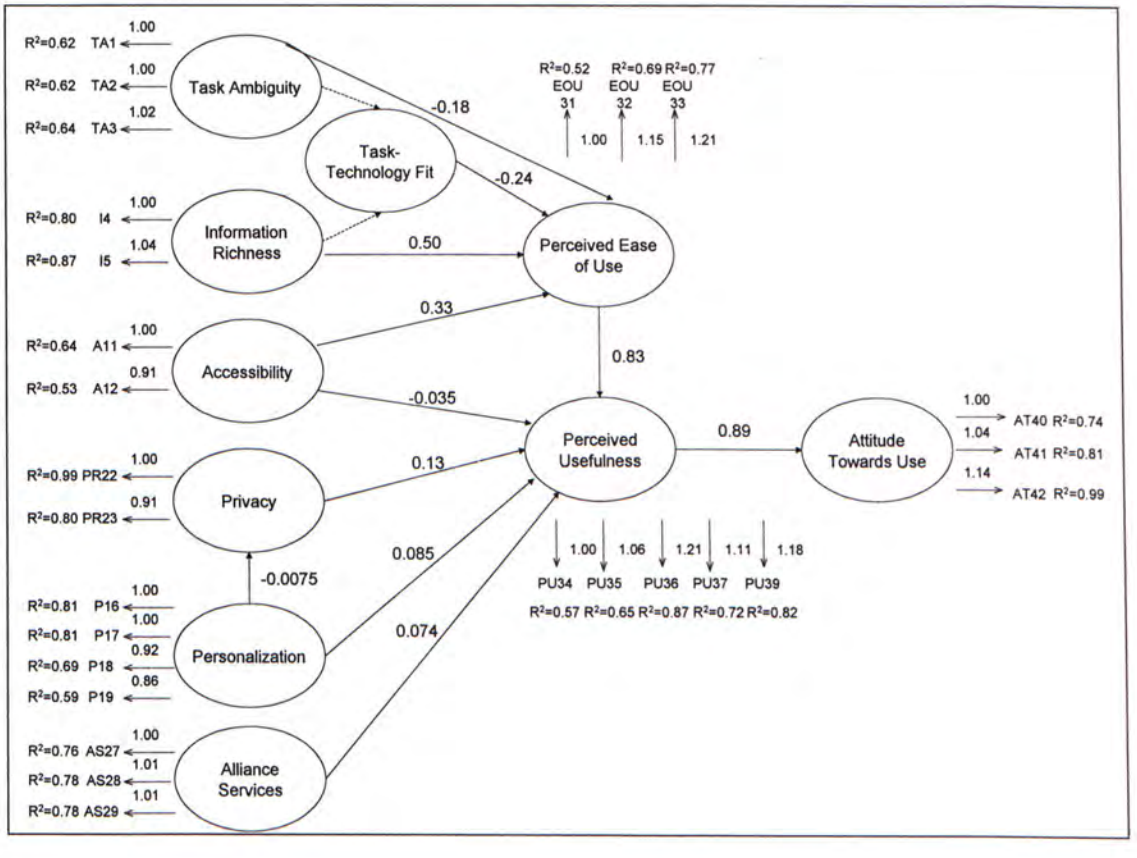
## Structural Model

LISREL 8.30 was used for the structural equation modeling analysis with the covariance matrix of those reliable responses to the questionnaires and computed task-technology fit score as input.

The results of the analysis are shown in Figure 2.

FIGURE 2

STRUCTURAL EQUATION MODELING RESULT



The model achieved an acceptable level of fit. Chi-square was 718.53 with degree of freedom of 319 and p-value smaller than 0.01. RMSEA was 0.087, GFI was 0.76, AGFI was 0.70, NFI was 0.83 and CFI was 0.88. The detail result is listed in Appendix 4.

Overall, the model accounted for a good portion of variation in attitude towards Internet banking. The constructs of task ambiguity, information richness, task-technology fit and accessibility accounted for 43% variation in perceived ease of use. Perceived ease of use, privacy, accessibility, personalization and alliance service accounted for 79% variation in perceived usefulness. In turn, perceived usefulness accounted for 61% variation in attitude.

## Hypothesis Testing

With the research model exhibiting acceptable fit and explanatory power, the coefficients in the regression equations of the model were used to test the research hypotheses. The results of t-statistics test are shown in Table 7.

TABLE 7

HYPOTHESIS TESTING RESULT (T-TEST)

| Hypothesis | Detail | Estimated Coefficient | t-statistics | Is Hypothesis supported at 90% Confidence Level ($\alpha$ = 0.10) | Is Hypothesis supported at 95% Confidence Level ($\alpha$ = 0.05) |
|---|---|---|---|---|---|
| H1 | Task ambiguity is negatively related | -0.18 | -1.89 | Y | Y |

| | | | | | |
|---|---|---|---|---|---|
| | to PEOU | | | | |
| H2 | Information richness is positively related to PEOU | 0.50 | 5.11 | Y | Y |
| H3 | Task-technology fit, constituted by task ambiguity and information richness, is positively related to PEOU | -0.24 | -2.31* | Y | Y |
| H4 | Accessibility is positively related to PEOU | 0.33 | 3.53 | Y | Y |
| H5 | Accessibility is positively related to PU | -0.035 | -0.54 | N | N |
| H6 | Privacy is positively related to PU | 0.13 | 4.02 | Y | Y |
| H7 | Personalization is negatively related to privacy | -0.0075 | -0.084 | N | N |
| H8 | Personalization is positively related to PU | 0.085 | 1.89 | Y | Y |
| H9 | Alliance service is positively related to PU | 0.074 | 1.49 | Y | N |
| H10 | PEOU is positively related to PU | 0.83 | 7.73 | Y | Y |
| H11 | PU is positively related to attitude to use | 0.89 | 9.45 | Y | Y |

* Negative value means positive relationship due to lack of fit computation

Almost all hypotheses were supported at 90% confidence level except H5 and H7. Moreover, most of hypotheses that were supported at 90% level were also supported at stricter 95% confidence level. The fact of small t-statistics figures for

H5 and H6 suggested that there were no statistically significant relationships between accessibility and perceived usefulness as well as between personalization and privacy.

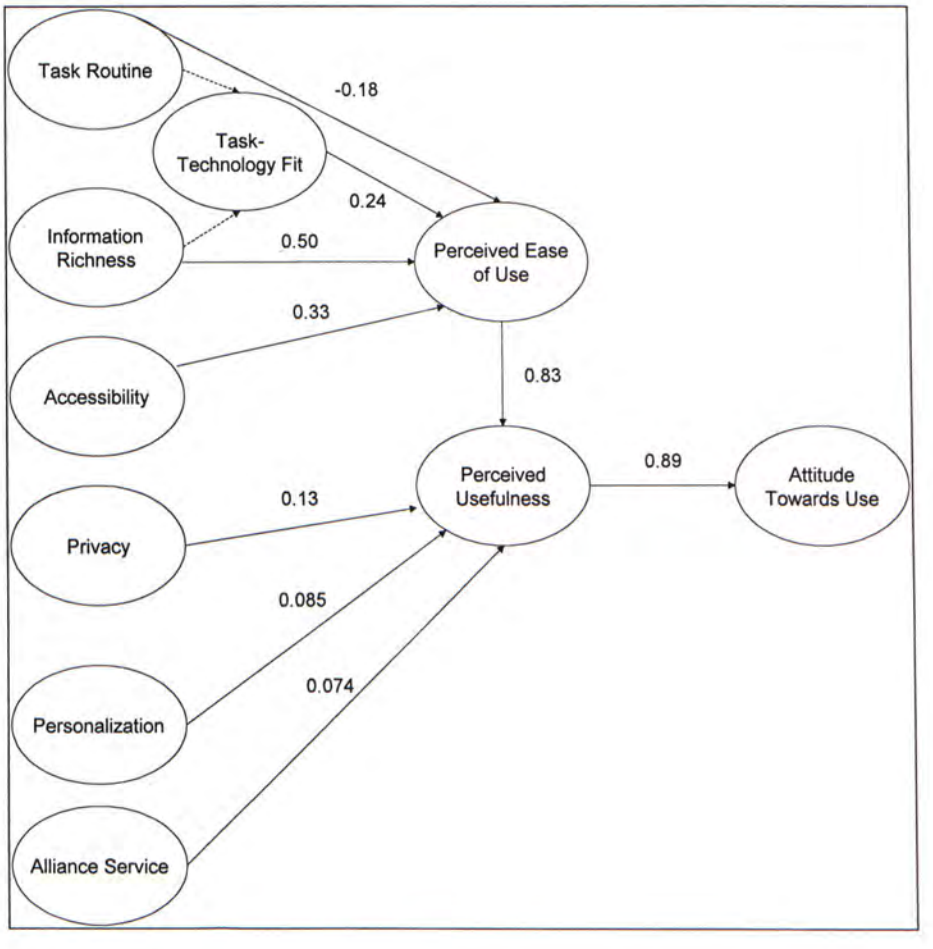
# CHAPTER VI

## DISCUSSION OF RESEARCH RESULTS

Overall, the results provided good support for the research model and hypotheses. The revised model with supported hypotheses is presented in Figure 3. The negative coefficient of the relationship between lack of fit computation and PEOU is negated in the figure to reflect the actual positive relationship.

FIGURE 3

RESULT MODEL WITH SUPPORTED HYPOTHESES



## Limitation of the Research

The primary limitation of the research was the number of samples obtained in the survey. Since 9 variables were measured in the questionnaires, ideally at least 270 samples (30 per variable) should be collected.

However, the 167 samples returned out of the 500 questionnaires disseminated corresponded to 33.4% response rate. Such response rate was considered good in Hong Kong. Moreover, the results demonstrated acceptable level of reliability, validity, model fit. Many hypotheses were supported at 90% and more strict 95% confidence levels. These should strengthen the confidence in the generalizability of the results and model.

The second limitation was that all the respondents lived in Hong Kong. Hence the effect of different countries and cultures on the research could not be assessed. This was a point worthy of further exploration since Internet is a global network accessible across countries.

## Contribution of the Model

The proposed model made several contributions to the technology acceptance and Internet literature, namely:

- confirmation of the importance of traditional constructs affecting acceptance in the Internet banking context
- clarification of the role of these past constructs, suggestion of new constructs affecting acceptance in the Internet banking context
- integration into a single framework

- identification of information richness and accessibility as key determinants of acceptance.

### Confirmation of the Importance of Traditional Constructs

While many researchers mentioned in the Chapter of Literature Review have expanded TAM to include such factors as task technology fit, information richness, accessibility, the technology under study was often used in the context of company or organization environment. Internet, however, is a global network encompassing different countries, organizations and individuals. Such context might be different from organizational environment, possibly resulting in different individual behaviours.

Although Teo, Lim and Lai have validated the TAM model in the Internet context [26], none of the past constructs mentioned above, which are external to PU and PEOU, were included in the study. To the authors' best knowledge, this study was the first one incorporating the constructs of task ambiguity, information richness, task-technology fit and accessibility in the acceptance of Internet banking. These constructs' impacts on attitude towards Internet banking were confirmed in this study and consistent with past findings. Hence this study helped to prove the applicability of these traditional constructs in the research of technology acceptance in the Internet context.

### Clarification of the Role of Traditional Constructs

These traditional constructs of task ambiguity, information richness, task-technology fit and accessibility mainly affect attitude via their effect on perceived

ease of use. Although we postulated a direct positive effect of accessibility on perceived usefulness in the model, the hypothesis was rejected. The effect of accessibility on perceived usefulness was found completely mediated by perceived ease of use.

While the effect of accessibility on perceived ease of use was consistent with past study [19], it was interesting to examine the operationalization and analysis result of the accessibility construct. The two questions measuring physical accessibility were found to have little variance extracted in the construct compared to the others measuring global and round-the-clock aspects of accessibility. The latter two aspects were undoubtedly a higher level of convenience than mere physical accessibility. Their dominance in the variation of accessibility could be due to the advancement of technology. With the widespread use of technology, people may take the luxuries in the past for granted nowadays. For example, expensive personal computers in the 1980s were becoming affordable "household appliances" in the late 1990s [1]. Result of this study showed that people could become indifferent to mere higher availability and speed of new technology.

Inductively, the meaning and operationalization of other traditional constructs, including information richness and task-technology fit, might also need re-examination as time evolves. Such continual re-examination is important for the study of technology acceptance as technology advances.

## Suggestion of New Constructs

Unlike those traditional constructs with many studies on their causal relationships on acceptance, there were only exploratory and descriptive researches discussing privacy, personalization and alliance service over Internet context [11, 17, 23].

To the authors' best knowledge, this study was the first explanatory one examining the relationships of privacy, personalization and alliance service with attitude and acceptance of Internet banking. Their operationalizations were designed, and proved with reliability and validity in this study. Their positive effects on perceived usefulness were also confirmed.

This was an important addition to the understanding of technology acceptance in the Internet context. It was often mentioned that personalization and alliance service were the benefits and new ways of doing business which could only be enabled and practically implemented with the reach and standardization provided by Internet. Privacy was also long cited as major concern for conducting Internet business and transactions. This study provided evidence for their importance towards end user acceptance – they were something customers value.

## Integration into a Single Framework

Based on TAM as foundation, the proposed model integrated theories on task-technology fit, information richness and media selection, as well as new propositions of privacy, personalization and alliance service into a single framework. This single

framework showed how each antecedent construct affect perceived ease of use and perceived usefulness and hence attitude toward Internet banking.

Such framework could promote a more comprehensive understanding in the acceptance of Internet banking. In fact, as Internet connecting more and more people and organizations, more innovative, advanced and complicated technologies would be invented. A comprehensive model with integrated perspectives may be more useful for understanding acceptance of these technologies. The explanatory power of this model was reflected in the good portion of variation accounted (61%) in attitude towards Internet banking.

Identification of Information Richness and Accessibility as Key Determinants

Among the various constructs affecting perceived usefulness which had a direct impact on attitude and hence acceptance of Internet banking, perceived ease of use had the greatest coefficient, indicating its key influence. In turn, information richness and accessibility were found to be the two key determinants on perceived ease of use. Comparing the magnitude of their coefficients with all the other independent variables, the effects were most significant. Even though security and privacy were often cited as major concern for Internet business, information richness and accessibility were identified to be the key determinants of attitude and hence acceptance of Internet banking.

Indeed, this was in line with the history of Internet. In fact, Internet had already been there long before its wide acceptance since 1990s. It was due to the widespread use of personal computers (accessibility) and the invention of multimedia-

enabled World Wide Web browsers (information richness) transforming "the Internet from a tool for dedicated techies to a powerhouse of information and a vast network of communication for everyone" [1].

It was interesting to note that even though Internet had brought about new customer values in personalization and alliance service in 1990s, traditional constructs of accessibility and information richness first discussed in the 1980s still prevailed in explanatory power towards the acceptance of Internet banking.

### Relationship between Personalization and Privacy

The above discussion raised some insights about the respondents' awareness of the changes brought about by Internet. As reflected in the result of LISREL, the relationship between personalization and privacy, though negative was not statistically significant.

As Internet banking was still in early stage in Hong Kong, the respondents might not be fully aware of the pros and cons of this technology and service. Whether people may not be aware of tracking personal information in using personalized service, or they did not mind such tracking in lieu of personalized service would be an interesting area to explore.

Likewise, although personalization and alliance service were confirmed to influence attitude and acceptance positively, their effects were less important compared to other factors in terms of the magnitude of coefficients in the regression equations. This could again be due to insufficient awareness by the respondents.

After all, when the two most often used banks in Hong Kong yet provided transaction services on Internet, their users had to imagine and figure out by themselves the even higher level form of convenience in terms of personalization and alliance service on Internet.

However, as time evolves and the development of Internet banking becomes more mature in Hong Kong, these relationships of personalization, privacy and alliance services may become more significant as more people become acquainted with the concepts, benefits as well as concerns.

# CHAPTER VII

# IMPLICATIONS TO MANAGERS AND RESEARCHERS

Basing on the results of this study, a number of implications to the practitioners in the banking service sector as well as to the researchers are identified and discussed as follows:

## Managerial Implications

One of the objectives of this study has been to identify viable antecedents to perceived ease of use (PEOU) and perceived usefulness (PU) in order to facilitate managerial interventions in promoting Internet banking usage. As a result, the research identified two significant factors that work through PEOU to influence Internet banking usage, namely they were: information richness and accessibility. Among all the factors which have been studied under the research model, information richness and accessibility had the greatest coefficient and were found to be the two key determinants on PEOU.

Looking further into the operationalization of these two variables in the study, it was founded that the significance of information richness in fact derived from its interactive nature while that of accessibility derived from its special features as global and round-the-clock.

To the customers of banking services in Hong Kong, physical accessibility is something that is already taken for granted. The major reasons are that Hong Kong is geographically small with very effective transport system; bank branches are very numerous and spreading over every street corners; remote banking services such as automatic teller machines and telephone banking are very popular. So to no one's surprise, the convenience aspect of accessibility, which implies access to banking services anywhere, i.e. global, and anytime, i.e. round-the -clock, was found to have significant influence on PEOU, rather than the physical aspect. Such advantageous position of Internet banking could be even further extended subsequent to the introduction of the third-generation mobile phone, which is expected to be introduced to the market in the coming few years, and built-in with enhanced log-in technology to Internet. Enabled by such mobile phone, the accessibility of Internet could truly be expanded to almost everywhere customers go.

The interactive nature of the factor of information richness was found to have significant impact on Internet banking usage. Undoubtedly, Internet can offer each visitor highly personalized interactive experience as compared to other distribution channel of banking services. Such an action-driven interactive power of Internet banking, through which every element of the web site blends together to enable a visitor to quickly accomplish a task, is highly treasured by the customers. In this regard, even telephone banking is no comparable to Internet banking as a highly interactive platform. Again, the introduction of third-generation mobile phone, capable of transmitting voice and video and hence enhanced interaction, can increase information richness in the media of mobile service.

Therefore, in order to capture the critical mass of customers as fast as possible, managers should put more thoughts in developing their Internet banking services by capitalizing the two significant factors discussed above. Specifically, the third-generation mobile phone, which has strengths in these two factors, could be a technology worth attention and strategic consideration.

Nevertheless, one crucial point that needs to be pointed out for the mangers is the importance of the factor of PU.

In this study, both information richness and accessibility were found to have significant influence on Internet banking usage, but working through the perception of ease of use. Since PU is generally more important that PEOU in affecting Internet usage [26], which was also verified in this study, this may imply that systems that at first seem easy to use may in the long run be abandoned if they do not provide critically needed functionality. The message here is that although the two factors of personalization and alliance service, which have also been found to have significant relationship with Internet banking usage working through PU, were having much less significance than information richness and accessibility in terms of coefficient value, managers should not neglect the importance of these two factors in designing and developing their Internet banking services because in the long run, they may make even more significant contributions than the other two factors working through PEOU. The major possible explanation for the relatively less significance of personalization and alliance service is that the respondents generally have not experienced any personalized and alliance services over Internet banking.

In this regard, the current and common strategy, adopted by banks in emphasizing the personalized and powerful alliance services that Internet banking can offer, still has future. In fact, to attract customers, many banks regard transaction services as first phase only and would further develop more services such as the one-stop comprehensive financial services and the huge reduction for customers' searching costs as what banks and other institutions in United States did. Presumably this factor of alliance service will in the longer term make decisive impact on Internet banking usage because it makes significant contribution to affecting customers' PU of the service. Hence managers should take long-term planning in the development of personalization and strategic alliance service while their current focus should be on enriching their interactive information in the services and providing high accessibility to customers.

Furthermore, as reflected in the results of this research, the relationship between personalization and privacy, though proved negative as hypothesized, was not statistically significant. However, this result by no means could reject the commonly accepted proposition that privacy is a very important issue for any e-commerce or e-business product or service. Banks should take very good care of the issue of privacy in designing and implementing their personalized Internet banking services in order to gain success. Up till now, the importance of privacy has been receiving growing attention and concern. Some customers have already indicated rejection to certain companies using the "cookie" technology to identify information on their own personal computers over the Internet. When people logged in to the site of Microsoft to get updates for Windows 98, they also expressed the same concern regarding the vulnerability of their privacy. So it is recommended that bank managers

should give more thoughts in how to achieve a good balance between privacy and personalization in Internet banking though this research has not found very significant relationship between privacy and personalization.

## Implications to Researchers

As mentioned in the last chapter, one major limitation of this study was the small sample size, which were 167. So first of all, it is recommended that the same study can be conducted again with an expanded sample size to further verify the results of this study.

Secondly, in relation to the operationalization of the variables, it is recommended to conduct further test to verify the validity of the tested constructs in this research in measuring the different observed variables, in particular for those less tests have been done before such as the new constructs of privacy, personalization and alliance services.

Among the variables used in this research model, it is recommended to conduct more studies to test the significance of the factors of personalization and alliance service on Internet banking usage as they have been regarded as the new customer values brought by Internet when banks started to provide Internet banking in mid 1990s. Although the two factors are commonly regarded as key to Internet businesses, very few studies have been done so far in finding out their relationship with users' acceptance.

This study has been conducted in Hong Kong which possesses certain unique cultural and geographical features. It is thus recommended to conduct the same study in other cultural and geographical settings and see whether different results would be collected.

Finally, although Internet banking was studied in this research, the constructs proposed such as task-technology fit, privacy, personalization and alliance service were indeed not specific to any business on Internet. Hence it is recommended that the research model of this study can also be used to study other e-commerce or e-businesses. Needless to say, the operationalization of the variables should be modified to tailor for the special features of the business for which the study is to be conducted.

# CHAPTER VIII

# CONCLUSION

As mentioned in the first chapter of this report, the major objectives of this study have been to find out a number of factors which are proved to have significant relationship with Internet banking usage; and to make recommendations to managers and researchers basing on the research results. In this regard, the authors believe that these two objectives were both achieved quite well.

First of all, a research model consisting of a number of actors have been proved by the research to have significant influence on Internet banking usage. Subsequently, a number of recommendations have been made for bank managers in designing and developing Internet banking services, making use of the research findings. Secondly, to the best knowledge of the authors, the research model seems to be the first one formulated for use in a research studying factors affecting e-commerce usage, and specifically Internet banking in this study. The same model is thus recommended for future tests in other e-commerce or e-business.

# APPENDIX 1

## SURVEY QUESTIONNAIRE

**Survey on Attitude toward Internet Banking in Hong Kong**

The purpose of this study is to understand your perceptions and attitudes toward Internet Banking. Although you may not have any actual experience in using any of the Internet Banking services, your true feelings and opinions toward each of the statements in the following pages are what we are interested in. Please state your agreement or disagreement with these statements.

If you feel that you *strongly agree* or *strongly disagree* with the statement, please mark your answer as follow:

Strongly agree : X : ___ : ___ : ___ : ___ : ___ : Strongly disagree

or

Strongly agree : ___ : ___ : ___ : ___ : ___ : X : Strongly disagree

If you *agree* or *disagree* with the statement, please mark your answer as follow:

Strongly agree : ___ : X : ___ : ___ : ___ : ___ : Strongly disagree

or

Strongly agree : ___ : ___ : ___ : ___ : X : ___ : Strongly disagree

If you *slightly agree* or *slightly disagree* with the statement, please mark your answer as follow:

Strongly agree : ___ : ___ : X : ___ : ___ : ___ : Strongly disagree

or

Strongly agree : ___ : ___ : ___ : ___ : X : ___ : Strongly disagree

If you *neither agree nor disagree* with the statement, please mark your answer as follow:

Strongly agree : ___ : ___ : ___ : X : ___ : ___ : Strongly disagree

**Please state your agreement or disagreement with the following statements based on how you feel about each of them.**

In the light of the range of banking tasks (for example bank account enquiry, bank account transfer, securities trading, purchase of insurance, mortgage arrangement…) you normally perform, to what extent do you agree with the following statements:

1. There is a clearly known way to do banking tasks I normally encounter.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

2. There is an understandable sequence of steps that can be followed to do banking tasks I normally encounter.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

3. I can rely on established practices to do banking tasks I normally encounter.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

To what extent do you agree with the following statements in relation to the nature of information provided by Internet Banking:

4. Internet Banking allows me to give and receive timely feedback.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

5. Internet Banking provides information in an interactive manner.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

6. Internet Banking provides multi-media information, such as graphics, sounds, or video.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

7. Internet Banking provides in the information a variety of different cues such as emotional tone, attitude, or formality.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

To what extent do you agree with the following statements:

8. I can find physical Internet connection easily.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

9. I can find a bank's WEB site in Internet easily.

   Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

10. I find the amount of time spent in waiting reasonable during using Internet Banking.

    Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

11. I can use Internet Banking at anytime of a day.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

12. I can use Internet Banking at anywhere in the world.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

13. Internet Banking enables me to customize the presentation of information on a bank's WEB site according to my personal needs.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

14. Internet Banking enables me to customize the content of information on a bank's WEB site according to my personal needs.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

15. Internet Banking enables a bank to deliver personalized messages to me (e.g. via e-mail).

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

16. Internet Banking enables a bank to record my access duration to the bank's WEB site.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

17. Internet Banking enables a bank to record my access pattern to the bank's WEB site.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

18. Internet Banking enables a bank to learn my banking behaviours after recording my access duration and pattern.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

19. Internet Banking enables a bank to learn my banking preferences after recording my access duration and pattern.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

20. Internet Banking enables a bank to personalize service/product offerings to me after learning my banking behaviours and preferences.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

21. I find my personal information under sufficient protection in using Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

22. My right to control the collection of my personal information is safeguarded in using Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

23. My right to control the use of my personal information is safeguarded in using Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

24. I have confidence that my personal information will not be misused in using Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

25. By visiting a bank's WEB site, I can find information from third parties other than the bank.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

26. My searching cost for other parties' financial services, products, and related information is reduced by visiting a bank's WEB site.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

27. By system integration with other parties via Internet, banks can provide to me integrated services, which are traditionally offered by separate organizations.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

28. By system integration with other parties via Internet, banks can provide one-stop services to me.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

29. By system integration with other parties via Internet, banks can provide expanded services to me.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

30. By system integration with other parties via Internet, banks can provide differentiated services to me.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

31. Learning to use Internet Banking is easy for me.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

32. I find it easy to use Internet Banking to accomplish my banking tasks.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

33. Overall, I believe Internet Banking is easy to use.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

34. I can accomplish my banking tasks more quickly using Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

35. I can accomplish my banking tasks more easily using Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

36. Internet Banking enhances my effectiveness in utilizing banking services.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

37. Internet Banking enhances my efficiency in utilizing banking services.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

38. Internet Banking enables me to make better decisions in utilizing banking services.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

39. Overall, I find Internet Banking useful.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

40. In my opinion, it is desirable to use Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

41. I think it is good for me to use Internet Banking.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

42. Overall, my attitude towards Internet Banking is favourable.

Strongly agree : ___:___:___:___:___:___:___: Strongly disagree

**Please provide us with some information about yourself in the following section.**

Sex: _____Male _____Female

Age: _____21 – 25 _____26 – 30
_____31 – 35 _____36 – 40
_____41 – 45 _____45 or above

Work Experience: _____years_____months

Income: _____less than $10,000 per month
_____$10,000 – 20,000 per month
_____$20,001 – 30,000 per month
_____$30,001 – 40,000 per month
_____$40,001 – 50,000 per month
_____$50,001 – 60,000 per month
_____over $60,000 per month

Occupation: _____

Which bank(s) do you use most often for handling your personal finance?
(Please list not more than two bank names.)

_____
_____

Are you currently using Internet Banking services?
_____Yes _____No

Are you currently using any other remote banking services such as telephone banking?
_____Yes _____No

*Thank you very much for your kind cooperation!*

# APPENDIX 2

## CONFIRMATORY FACTOR ANALYSIS RESULT

DATE: 4/12/2000
TIME: 15:58

L I S R E L 8.30

BY

Karl G. Jöreskog & Dag Sörbom

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```
 The following lines were read from file
D:\PROJECT2\PROJECT\FINAL\LISREL\RCFA4.LS8:

 Factors Affecting Internet Banking

 Observed Variables: TA1 TA2 TA3 I4 I5 A11 A12 P16 P17 P18 P19
 PR22 PR23 AS27 AS28 AS29 EOU31 EOU32 EOU33 PU34
 PU35 PU36 PU37 PU39 AT40 AT41 AT42

 Covariance Matrix from file rcfa4.cov

 Sample size=167

 Latent Variables: TASKAMB INFORICH ACC PERSON PRIVACY ALLSER PEOU PU
ATTITUDE

 Relationships:
 TA1 TA2 TA3 = TASKAMB
 I4 I5 = INFORICH
 A11 A12 = ACC
 P16 P17 P18 P19 = PERSON
 PR22 PR23 = PRIVACY
 AS27 AS28 AS29 = ALLSER
 EOU31 EOU32 EOU33 = PEOU
 PU34 PU35 PU36 PU37 PU39 = PU
 AT40 AT41 AT42 = ATTITUDE

 Path Diagram
 Admissibility Check=Off

 Set the error variances of TA1-AT42 free
 Set the error variance of PR23 to 0.20
```

End of Problem

Sample Size = 167

Factors Affecting Internet Banking

Covariance Matrix to be Analyzed

| | TA1 | TA2 | TA3 | I4 | I5 | A11 |
|---|---|---|---|---|---|---|
| TA1 | 1.00 | | | | | |
| TA2 | 0.72 | 1.00 | | | | |
| TA3 | 0.62 | 0.64 | 1.00 | | | |
| I4 | -0.30 | -0.25 | -0.16 | 1.00 | | |
| I5 | -0.24 | -0.17 | -0.26 | 0.58 | 1.00 | |
| A11 | -0.20 | -0.24 | -0.11 | 0.30 | 0.29 | 1.00 |
| A12 | -0.28 | -0.26 | -0.21 | 0.33 | 0.20 | 0.59 |
| P16 | -0.36 | -0.40 | -0.42 | 0.38 | 0.31 | 0.16 |
| P17 | -0.34 | -0.38 | -0.33 | 0.39 | 0.27 | 0.20 |
| P18 | -0.33 | -0.40 | -0.35 | 0.30 | 0.23 | 0.19 |
| P19 | -0.36 | -0.33 | -0.29 | 0.37 | 0.23 | 0.15 |
| PR22 | 0.13 | 0.17 | 0.17 | 0.18 | 0.13 | 0.16 |
| PR23 | 0.15 | 0.23 | 0.23 | 0.23 | 0.14 | 0.13 |
| AS27 | -0.21 | -0.26 | -0.22 | 0.23 | 0.28 | 0.21 |
| AS28 | -0.23 | -0.30 | -0.20 | 0.28 | 0.35 | 0.29 |
| AS29 | -0.22 | -0.23 | -0.22 | 0.28 | 0.32 | 0.29 |
| EOU31 | -0.44 | -0.31 | -0.25 | 0.44 | 0.45 | 0.32 |
| EOU32 | -0.21 | -0.10 | -0.09 | 0.42 | 0.47 | 0.40 |
| EOU33 | -0.22 | -0.21 | -0.15 | 0.47 | 0.45 | 0.34 |
| PU34 | -0.10 | 0.03 | 0.00 | 0.33 | 0.42 | 0.28 |
| PU35 | -0.14 | 0.00 | 0.02 | 0.35 | 0.45 | 0.23 |
| PU36 | -0.18 | -0.09 | -0.02 | 0.42 | 0.46 | 0.35 |
| PU37 | -0.08 | -0.08 | -0.05 | 0.44 | 0.45 | 0.34 |
| PU39 | -0.17 | -0.15 | -0.05 | 0.44 | 0.50 | 0.39 |
| AT40 | -0.07 | 0.01 | 0.02 | 0.41 | 0.41 | 0.34 |
| AT41 | -0.08 | -0.02 | 0.00 | 0.43 | 0.40 | 0.36 |
| AT42 | -0.10 | -0.09 | -0.05 | 0.45 | 0.51 | 0.37 |

Covariance Matrix to be Analyzed

| | A12 | P16 | P17 | P18 | P19 | PR22 |
|---|---|---|---|---|---|---|
| A12 | 1.00 | | | | | |
| P16 | 0.16 | 1.00 | | | | |
| P17 | 0.25 | 0.81 | 1.00 | | | |
| P18 | 0.13 | 0.64 | 0.75 | 1.00 | | |
| P19 | 0.20 | 0.67 | 0.72 | 0.84 | 1.00 | |
| PR22 | -0.02 | -0.01 | -0.06 | 0.05 | 0.11 | 1.00 |
| PR23 | -0.04 | -0.02 | -0.11 | 0.00 | 0.14 | 0.90 |
| AS27 | 0.25 | 0.39 | 0.40 | 0.36 | 0.28 | 0.16 |
| AS28 | 0.24 | 0.47 | 0.43 | 0.39 | 0.32 | 0.22 |
| AS29 | 0.29 | 0.46 | 0.46 | 0.40 | 0.38 | 0.18 |
| EOU31 | 0.38 | 0.38 | 0.34 | 0.32 | 0.35 | 0.12 |
| EOU32 | 0.25 | 0.28 | 0.32 | 0.34 | 0.30 | 0.36 |
| EOU33 | 0.32 | 0.35 | 0.34 | 0.37 | 0.31 | 0.21 |
| PU34 | 0.10 | 0.32 | 0.32 | 0.32 | 0.33 | 0.26 |
| PU35 | 0.15 | 0.32 | 0.32 | 0.34 | 0.35 | 0.31 |
| PU36 | 0.21 | 0.43 | 0.35 | 0.40 | 0.42 | 0.37 |
| PU37 | 0.21 | 0.44 | 0.49 | 0.53 | 0.44 | 0.30 |
| PU39 | 0.30 | 0.30 | 0.35 | 0.40 | 0.33 | 0.32 |
| AT40 | 0.28 | 0.22 | 0.27 | 0.29 | 0.33 | 0.34 |
| AT41 | 0.37 | 0.23 | 0.31 | 0.31 | 0.30 | 0.32 |
| AT42 | 0.32 | 0.26 | 0.32 | 0.31 | 0.36 | 0.31 |

Covariance Matrix to be Analyzed

| | PR23 | AS27 | AS28 | AS29 | EOU31 | EOU32 |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| PR23 | 1.00 | | | | | |
| AS27 | 0.11 | 1.00 | | | | |
| AS28 | 0.18 | 0.77 | 1.00 | | | |
| AS29 | 0.17 | 0.77 | 0.77 | 1.00 | | |
| EOU31 | 0.16 | 0.38 | 0.46 | 0.44 | 1.00 | |
| EOU32 | 0.33 | 0.37 | 0.46 | 0.42 | 0.60 | 1.00 |
| EOU33 | 0.24 | 0.36 | 0.45 | 0.43 | 0.75 | 0.73 |
| PU34 | 0.30 | 0.36 | 0.42 | 0.40 | 0.45 | 0.58 |
| PU35 | 0.36 | 0.38 | 0.42 | 0.44 | 0.49 | 0.61 |
| PU36 | 0.41 | 0.39 | 0.52 | 0.47 | 0.55 | 0.72 |
| PU37 | 0.29 | 0.46 | 0.51 | 0.51 | 0.49 | 0.72 |
| PU39 | 0.35 | 0.42 | 0.43 | 0.44 | 0.61 | 0.69 |
| AT40 | 0.34 | 0.36 | 0.29 | 0.38 | 0.53 | 0.53 |
| AT41 | 0.31 | 0.42 | 0.31 | 0.39 | 0.55 | 0.58 |
| AT42 | 0.34 | 0.39 | 0.39 | 0.42 | 0.55 | 0.58 |

Covariance Matrix to be Analyzed

| | EOU33 | PU34 | PU35 | PU36 | PU37 | PU39 |
|---|---|---|---|---|---|---|
| EOU33 | 1.00 | | | | | |
| PU34 | 0.65 | 1.00 | | | | |
| PU35 | 0.63 | 0.73 | 1.00 | | | |
| PU36 | 0.68 | 0.77 | 0.81 | 1.00 | | |
| PU37 | 0.66 | 0.69 | 0.73 | 0.83 | 1.00 | |
| PU39 | 0.79 | 0.66 | 0.71 | 0.71 | 0.76 | 1.00 |
| AT40 | 0.64 | 0.61 | 0.55 | 0.62 | 0.62 | 0.73 |
| AT41 | 0.66 | 0.55 | 0.55 | 0.59 | 0.59 | 0.75 |
| AT42 | 0.66 | 0.62 | 0.59 | 0.69 | 0.61 | 0.79 |

Covariance Matrix to be Analyzed

| | AT40 | AT41 | AT42 |
|---|---|---|---|
| AT40 | 1.00 | | |
| AT41 | 0.89 | 1.00 | |
| AT42 | 0.87 | 0.90 | 1.00 |

Factors Affecting Internet Banking

Number of Iterations = 18

LISREL Estimates (Maximum Likelihood)

TA1 = 0.82*TASKAMB, Errorvar.= 0.32 , $R^2$ = 0.68
(0.067) (0.052)
12.25 6.17

TA2 = 0.87*TASKAMB, Errorvar.= 0.24 , $R^2$ = 0.76
(0.066) (0.049)
13.22 4.96

TA3 = 0.75*TASKAMB, Errorvar.= 0.44 , $R^2$ = 0.56
(0.070) (0.059)
10.79 7.39

I4 = 0.78*INFORICH, Errorvar.= 0.40 , $R^2$ = 0.60
(0.076) (0.076)
10.20 5.20

I5 = 0.74*INFORICH, Errorvar.= 0.45 , $R^2$ = 0.55
(0.076) (0.075)
9.71 5.99

A11 = 0.73*ACC, Errorvar.= 0.46 , $R^2$ = 0.54
(0.083) (0.089)

```
        8.83                    5.24

A12 = 0.81*ACC, Errorvar.= 0.34  , R² = 0.66
      (0.084)                (0.097)
       9.65                   3.55

P16 = 0.82*PERSON, Errorvar.= 0.33  , R² = 0.67
      (0.065)                  (0.043)
       12.63                    7.61

P17 = 0.88*PERSON, Errorvar.= 0.23  , R² = 0.77
      (0.062)                  (0.035)
       14.07                    6.61

P18 = 0.88*PERSON, Errorvar.= 0.22  , R² = 0.78
      (0.062)                  (0.034)
       14.15                    6.53

P19 = 0.87*PERSON, Errorvar.= 0.25  , R² = 0.75
      (0.063)                  (0.036)
       13.76                    6.89

PR22 = 0.99*PRIVACY, Errorvar.= 0.022 , R² = 0.98
       (0.057)                  (0.027)
        17.32                    0.80

PR23 = 0.91*PRIVACY, Errorvar.= 0.20, R² = 0.80
       (0.062)
        14.68

AS27 = 0.87*ALLSER, Errorvar.= 0.25  , R² = 0.75
       (0.063)                  (0.039)
        13.70                    6.36

AS28 = 0.89*ALLSER, Errorvar.= 0.22  , R² = 0.78
       (0.063)                  (0.037)
        14.15                    5.82

AS29 = 0.88*ALLSER, Errorvar.= 0.23  , R² = 0.77
       (0.063)                  (0.038)
        14.00                    6.01

EOU31 = 0.79*PEOU, Errorvar.= 0.38  , R² = 0.62
        (0.066)                (0.048)
         11.93                  7.82

EOU32 = 0.81*PEOU, Errorvar.= 0.34  , R² = 0.66
        (0.065)                (0.045)
         12.40                  7.60

EOU33 = 0.91*PEOU, Errorvar.= 0.17  , R² = 0.83
        (0.061)                (0.033)
         14.90                  5.15

 PU34 = 0.81*PU, Errorvar.= 0.34  , R² = 0.66
        (0.064)              (0.041)
         12.65                8.19

 PU35 = 0.84*PU, Errorvar.= 0.29  , R² = 0.71
        (0.063)              (0.036)
         13.39                7.94

 PU36 = 0.91*PU, Errorvar.= 0.17  , R² = 0.83
        (0.060)              (0.025)
         15.21                6.76

 PU37 = 0.89*PU, Errorvar.= 0.21  , R² = 0.79
        (0.061)              (0.028)
```

14.60 7.29

PU39 = 0.84*PU, Errorvar.= 0.29 , $R^2$ = 0.71
(0.063) (0.036)
13.39 7.94

AT40 = 0.92*ATTITUDE, Errorvar.= 0.15 , $R^2$ = 0.85
(0.059) (0.021)
15.54 7.03

AT41 = 0.96*ATTITUDE, Errorvar.= 0.085 , $R^2$ = 0.91
(0.058) (0.017)
16.59 5.11

AT42 = 0.95*ATTITUDE, Errorvar.= 0.11 , $R^2$ = 0.89
(0.058) (0.018)
16.26 5.87

Correlation Matrix of Independent Variables

| | TASKAMB | INFORICH | ACC | PERSON | PRIVACY | ALLSER |
|---|---|---|---|---|---|---|
| TASKAMB | 1.00 | | | | | |
| INFORICH | -0.37 | 1.00 | | | | |
| | (0.09) | | | | | |
| | -4.20 | | | | | |
| ACC | -0.36 | 0.48 | 1.00 | | | |
| | (0.09) | (0.09) | | | | |
| | -4.16 | 5.36 | | | | |
| PERSON | -0.50 | 0.47 | 0.27 | 1.00 | | |
| | (0.07) | (0.08) | (0.09) | | | |
| | -7.46 | 6.03 | 3.08 | | | |
| PRIVACY | 0.20 | 0.21 | 0.07 | 0.03 | 1.00 | |
| | (0.08) | (0.09) | (0.09) | (0.08) | | |
| | 2.41 | 2.42 | 0.73 | 0.31 | | |
| ALLSER | -0.33 | 0.43 | 0.38 | 0.52 | 0.22 | 1.00 |
| | (0.08) | (0.08) | (0.08) | (0.06) | (0.08) | |
| | -4.14 | 5.32 | 4.60 | 8.10 | 2.76 | |
| PEOU | -0.30 | 0.69 | 0.49 | 0.45 | 0.27 | 0.55 |
| | (0.08) | (0.06) | (0.08) | (0.07) | (0.08) | (0.06) |
| | -3.66 | 11.03 | 6.33 | 6.43 | 3.47 | 8.74 |
| PU | -0.11 | 0.64 | 0.37 | 0.51 | 0.38 | 0.59 |
| | (0.09) | (0.06) | (0.08) | (0.06) | (0.07) | (0.06) |
| | -1.31 | 10.12 | 4.47 | 8.15 | 5.39 | 10.19 |
| ATTITUDE | -0.06 | 0.61 | 0.47 | 0.37 | 0.35 | 0.45 |
| | (0.08) | (0.07) | (0.08) | (0.07) | (0.07) | (0.07) |
| | -0.69 | 9.26 | 6.19 | 5.06 | 4.90 | 6.70 |

Correlation Matrix of Independent Variables

| | PEOU | PU | ATTITUDE |
|---|---|---|---|
| PEOU | 1.00 | | |
| PU | 0.86 | 1.00 | |
| | (0.03) | | |
| | 30.21 | | |

| | | | |
|---|---|---|---|
| ATTITUDE | 0.75 | 0.76 | 1.00 |
| | (0.04) | (0.04) | |
| | 18.45 | 20.83 | |

Goodness of Fit Statistics

Degrees of Freedom = 289
Minimum Fit Function Chi-Square = 865.18 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 698.69 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 409.69
90 Percent Confidence Interval for NCP = (336.06 ; 491.01)

Minimum Fit Function Value = 5.21
Population Discrepancy Function Value (F0) = 2.47
90 Percent Confidence Interval for F0 = (2.02 ; 2.96)
Root Mean Square Error of Approximation (RMSEA) = 0.092
90 Percent Confidence Interval for RMSEA = (0.084 ; 0.10)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 5.28
90 Percent Confidence Interval for ECVI = (4.84 ; 5.77)
ECVI for Saturated Model = 4.55
ECVI for Independence Model = 27.30

Chi-Square for Independence Model with 351 Degrees of Freedom = 4477.34
Independence AIC = 4531.34
Model AIC = 876.69
Saturated AIC = 756.00
Independence CAIC = 4642.52
Model CAIC = 1243.19
Saturated CAIC = 2312.60

Root Mean Square Residual (RMR) = 0.053
Standardized RMR = 0.053
Goodness of Fit Index (GFI) = 0.76
Adjusted Goodness of Fit Index (AGFI) = 0.69
Parsimony Goodness of Fit Index (PGFI) = 0.58

Normed Fit Index (NFI) = 0.81
Non-Normed Fit Index (NNFI) = 0.83
Parsimony Normed Fit Index (PNFI) = 0.66
Comparative Fit Index (CFI) = 0.86
Incremental Fit Index (IFI) = 0.86
Relative Fit Index (RFI) = 0.77

Critical N (CN) = 67.74

The Modification Indices Suggest to Add the

| Path to | from | Decrease in Chi-Square | New Estimate |
|---|---|---|---|
| A11 | PU | 8.6 | 0.27 |
| A12 | PU | 8.6 | -0.29 |
| EOU31 | TASKAMB | 16.9 | -0.25 |
| EOU31 | PU | 16.9 | -0.57 |
| EOU32 | PRIVACY | 13.9 | 0.20 |
| EOU32 | PU | 18.5 | 0.59 |
| PU37 | PERSON | 11.6 | 0.17 |
| PU39 | INFORICH | 9.6 | 0.23 |
| PU39 | ACC | 15.0 | 0.22 |
| PU39 | PEOU | 36.1 | 0.67 |
| PU39 | ATTITUDE | 43.7 | 0.51 |
| AT41 | PU | 9.4 | -0.17 |
| AT42 | INFORICH | 8.9 | 0.15 |

The Modification Indices Suggest to Add an Error Covariance

| Between | and | Decrease in Chi-Square | New Estimate |
|---|---|---|---|

| | | | |
|---|---|---|---|
| I5 | TA3 | 9.2 | -0.13 |
| P17 | P16 | 40.8 | 0.20 |
| P18 | P16 | 30.7 | -0.17 |
| P19 | P17 | 15.9 | -0.13 |
| P19 | P18 | 58.6 | 0.24 |
| PR23 | P19 | 14.7 | 0.08 |
| PR23 | PR22 | 8.0 | 0.21 |
| PR23 | PR23 | 8.0 | 0.01 |
| EOU31 | TA1 | 11.4 | -0.11 |
| EOU32 | A11 | 8.7 | 0.12 |
| PU36 | P16 | 9.3 | 0.07 |
| PU36 | P17 | 9.9 | -0.06 |
| PU36 | AS28 | 7.9 | 0.06 |
| PU37 | TA1 | 12.8 | 0.09 |
| PU37 | P18 | 8.3 | 0.06 |
| PU37 | EOU32 | 10.2 | 0.08 |
| PU39 | EOU33 | 11.6 | 0.08 |
| PU39 | PU36 | 21.9 | -0.11 |
| AT41 | A12 | 9.0 | 0.07 |
| AT41 | AS27 | 21.4 | 0.08 |
| AT41 | AS28 | 13.6 | -0.06 |
| AT41 | PU36 | 14.0 | -0.05 |
| AT42 | I5 | 12.6 | 0.08 |
| AT42 | AS28 | 10.6 | 0.05 |
| AT42 | PU36 | 13.8 | 0.05 |

The Problem used 153416 Bytes (= 0.2% of Available Workspace)

Time used: 2.191 Seconds

# APPENDIX 3

## EXPLORATORY FACTOR ANALYSIS RESULT

No number of components specified

**Communalities**

| | Initial | Extraction |
|---|---|---|
| TA1 | 1.000 | .700 |
| TA2 | 1.000 | .702 |
| TA3 | 1.000 | .615 |
| I4 | 1.000 | .467 |
| I5 | 1.000 | .472 |
| A11 | 1.000 | .587 |
| A12 | 1.000 | .756 |
| P16 | 1.000 | .702 |
| P17 | 1.000 | .790 |
| P18 | 1.000 | .791 |
| P19 | 1.000 | .824 |
| PR22 | 1.000 | .905 |
| PR23 | 1.000 | .919 |
| AS27 | 1.000 | .804 |
| AS28 | 1.000 | .832 |
| AS29 | 1.000 | .795 |
| EOU31 | 1.000 | .582 |
| EOU32 | 1.000 | .622 |
| EOU33 | 1.000 | .697 |
| PU34 | 1.000 | .672 |
| PU35 | 1.000 | .679 |
| PU36 | 1.000 | .772 |
| PU37 | 1.000 | .732 |
| PU39 | 1.000 | .764 |
| AT40 | 1.000 | .746 |
| AT41 | 1.000 | .784 |
| AT42 | 1.000 | .764 |

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

| Componen | Initial Eigenvalues | | | traction Sums of Squared Loadin | | | otation Sums of Squared Loading | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 10.132 | 37.526 | 37.526 | 10.132 | 37.526 | 37.526 | 7.414 | 27.459 | 27.459 |
| 2 | 3.393 | 12.565 | 50.092 | 3.393 | 12.565 | 50.092 | 3.109 | 11.513 | 38.972 |
| 3 | 1.881 | 6.966 | 57.057 | 1.881 | 6.966 | 57.057 | 2.628 | 9.735 | 48.707 |
| 4 | 1.511 | 5.594 | 62.652 | 1.511 | 5.594 | 62.652 | 2.577 | 9.546 | 58.253 |
| 5 | 1.378 | 5.103 | 67.755 | 1.378 | 5.103 | 67.755 | 1.970 | 7.295 | 65.547 |
| 6 | 1.182 | 4.379 | 72.134 | 1.182 | 4.379 | 72.134 | 1.778 | 6.587 | 72.134 |
| 7 | .913 | 3.383 | 75.517 | | | | | | |
| 8 | .882 | 3.266 | 78.783 | | | | | | |
| 9 | .712 | 2.637 | 81.420 | | | | | | |
| 10 | .575 | 2.130 | 83.550 | | | | | | |
| 11 | .513 | 1.899 | 85.449 | | | | | | |
| 12 | .464 | 1.718 | 87.168 | | | | | | |
| 13 | .454 | 1.682 | 88.850 | | | | | | |
| 14 | .389 | 1.442 | 90.292 | | | | | | |
| 15 | .376 | 1.393 | 91.685 | | | | | | |
| 16 | .304 | 1.127 | 92.812 | | | | | | |
| 17 | .292 | 1.080 | 93.892 | | | | | | |
| 18 | .268 | .991 | 94.883 | | | | | | |
| 19 | .228 | .844 | 95.727 | | | | | | |
| 20 | .226 | .838 | 96.565 | | | | | | |
| 21 | .202 | .749 | 97.314 | | | | | | |
| 22 | .183 | .676 | 97.991 | | | | | | |
| 23 | .142 | .524 | 98.515 | | | | | | |
| 24 | .129 | .476 | 98.991 | | | | | | |
| 25 | .107 | .397 | 99.387 | | | | | | |
| 26 | 9.77E-02 | .362 | 99.749 | | | | | | |
| 27 | 6.77E-02 | .251 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

**Component Matrix[a]**

| | Component | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| TA1 | -.290 | .611 | .326 | -5.1E-02 | -.209 | .300 |
| TA2 | -.249 | .706 | .258 | -.116 | -.191 | .159 |
| TA3 | -.193 | .653 | .207 | -9.5E-02 | -.172 | .264 |
| I4 | .571 | -9.8E-02 | -.255 | -.131 | .219 | -4.2E-02 |
| I5 | .545 | -3.1E-02 | -.256 | -1.7E-02 | 3.05E-02 | -.329 |
| A11 | .403 | -2.0E-02 | -.471 | .258 | .114 | .351 |
| A12 | .306 | -.176 | -.530 | .226 | -1.2E-02 | .547 |
| P16 | .554 | -.522 | .319 | -.131 | 4.34E-02 | 5.79E-02 |
| P17 | .562 | -.534 | .274 | -.221 | -2.2E-02 | .253 |
| P18 | .564 | -.445 | .353 | -.286 | .169 | .202 |
| P19 | .543 | -.390 | .329 | -.337 | .314 | .239 |
| PR22 | .347 | .498 | .176 | .295 | .647 | 2.39E-02 |
| PR23 | .360 | .528 | .168 | .242 | .650 | -2.5E-02 |
| AS27 | .578 | -.163 | .293 | .535 | -.260 | 5.62E-02 |
| AS28 | .641 | -.199 | .289 | .518 | -.167 | -2.3E-02 |
| AS29 | .632 | -.157 | .259 | .503 | -.216 | 6.59E-02 |
| EOU31 | .680 | -7.2E-02 | -.291 | 1.80E-02 | -7.4E-02 | -.155 |
| EOU32 | .753 | .145 | -9.7E-02 | 2.93E-02 | 1.86E-03 | -.157 |
| EOU33 | .781 | 8.96E-02 | -.181 | -.109 | -.141 | -.123 |
| PU34 | .715 | .250 | .110 | -.147 | -.159 | -.198 |
| PU35 | .732 | .254 | .149 | -6.7E-02 | -9.0E-02 | -.209 |
| PU36 | .822 | .212 | .109 | -7.6E-02 | -7.9E-03 | -.184 |
| PU37 | .813 | .135 | .185 | -9.2E-02 | -9.6E-02 | -4.2E-02 |
| PU39 | .828 | .216 | -.129 | -7.5E-02 | -8.9E-02 | -2.6E-02 |
| AT40 | .742 | .301 | -.157 | -.193 | -7.3E-02 | .194 |
| AT41 | .754 | .291 | -.216 | -.137 | -9.0E-02 | .239 |
| AT42 | .783 | .285 | -.180 | -.140 | -6.1E-02 | .117 |

Extraction Method: Principal Component Analysis.

a. 6 components extracted.

**Rotated Component Matrix[a]**

| | Component | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| TA1 | -9.2E-02 | -.150 | -3.1E-02 | .810 | 6.13E-02 | -8.9E-02 |
| TA2 | 3.76E-02 | -.238 | -.118 | .772 | 9.15E-02 | -.163 |
| TA3 | 3.89E-02 | -.180 | -1.0E-01 | .749 | 8.99E-02 | -3.6E-02 |
| I4 | .479 | .220 | -6.6E-02 | -.340 | .150 | .217 |
| I5 | .557 | -2.8E-02 | 6.18E-02 | -.393 | 5.84E-02 | 1.47E-02 |
| A11 | .235 | -2.2E-02 | .109 | -.173 | .137 | .686 |
| A12 | 9.91E-02 | 5.32E-02 | .102 | -.142 | -7.2E-02 | .841 |
| P16 | .209 | .698 | .294 | -.281 | -6.4E-02 | -4.5E-02 |
| P17 | .212 | .787 | .239 | -.178 | -.162 | .102 |
| P18 | .222 | .834 | .139 | -.163 | 2.78E-02 | 7.54E-03 |
| P19 | .206 | .858 | 2.40E-02 | -.151 | .145 | 3.81E-02 |
| PR22 | .212 | -3.7E-03 | 9.98E-02 | .110 | .914 | 5.65E-02 |
| PR23 | .260 | -1.2E-02 | 5.48E-02 | .106 | .915 | 1.39E-02 |
| AS27 | .243 | .160 | .840 | -6.0E-02 | 3.05E-02 | 9.70E-02 |
| AS28 | .287 | .196 | .819 | -.162 | 9.99E-02 | 5.66E-02 |
| AS29 | .293 | .188 | .803 | -8.4E-02 | 6.19E-02 | .129 |
| EOU31 | .628 | 5.30E-02 | .166 | -.344 | -2.2E-02 | .194 |
| EOU32 | .711 | 7.98E-02 | .215 | -.160 | .179 | 8.40E-02 |
| EOU33 | .788 | .117 | .147 | -.156 | -1.5E-02 | .126 |
| PU34 | .768 | .140 | .192 | 5.39E-02 | 6.64E-02 | -.135 |
| PU35 | .743 | .140 | .249 | 3.12E-02 | .160 | -.140 |
| PU36 | .788 | .205 | .235 | -4.0E-02 | .216 | -7.7E-02 |
| PU37 | .726 | .320 | .296 | 4.14E-02 | .116 | -2.5E-02 |
| PU39 | .820 | .134 | .172 | -3.2E-02 | .104 | .180 |
| AT40 | .764 | .189 | 2.49E-02 | .150 | 9.03E-02 | .309 |
| AT41 | .759 | .159 | 5.53E-02 | .137 | 7.93E-02 | .393 |
| AT42 | .797 | .150 | 6.62E-02 | 7.32E-02 | .115 | .288 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

**Component Transformation Matrix**

| Component | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | .810 | .361 | .344 | -.178 | .165 | .188 |
| 2 | .365 | -.486 | -.168 | .663 | .401 | -.056 |
| 3 | -.197 | .486 | .405 | .406 | .184 | -.602 |
| 4 | -.274 | -.435 | .751 | -.142 | .305 | .240 |
| 5 | -.200 | .227 | -.354 | -.308 | .828 | .056 |
| 6 | -.237 | .395 | .012 | .499 | -.024 | .734 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Set number of components to 9

**Communalities**

| | Initial | Extraction |
|---|---|---|
| TA1 | 1.000 | .756 |
| TA2 | 1.000 | .749 |
| TA3 | 1.000 | .749 |
| I4 | 1.000 | .801 |
| I5 | 1.000 | .823 |
| A11 | 1.000 | .829 |
| A12 | 1.000 | .793 |
| P16 | 1.000 | .729 |
| P17 | 1.000 | .809 |
| P18 | 1.000 | .806 |
| P19 | 1.000 | .826 |
| PR22 | 1.000 | .916 |
| PR23 | 1.000 | .925 |
| AS27 | 1.000 | .847 |
| AS28 | 1.000 | .838 |
| AS29 | 1.000 | .811 |
| EOU31 | 1.000 | .839 |
| EOU32 | 1.000 | .712 |
| EOU33 | 1.000 | .823 |
| PU34 | 1.000 | .761 |
| PU35 | 1.000 | .742 |
| PU36 | 1.000 | .857 |
| PU37 | 1.000 | .790 |
| PU39 | 1.000 | .775 |
| AT40 | 1.000 | .881 |
| AT41 | 1.000 | .916 |
| AT42 | 1.000 | .881 |

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

| Component | Initial Eigenvalues | | | xtraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 10.132 | 37.526 | 37.526 | 10.132 | 37.526 | 37.526 | 4.248 | 15.733 | 15.733 |
| 2 | 3.393 | 12.565 | 50.092 | 3.393 | 12.565 | 50.092 | 3.153 | 11.679 | 27.412 |
| 3 | 1.881 | 6.966 | 57.057 | 1.881 | 6.966 | 57.057 | 3.040 | 11.261 | 38.673 |
| 4 | 1.511 | 5.594 | 62.652 | 1.511 | 5.594 | 62.652 | 2.641 | 9.781 | 48.454 |
| 5 | 1.378 | 5.103 | 67.755 | 1.378 | 5.103 | 67.755 | 2.282 | 8.450 | 56.905 |
| 6 | 1.182 | 4.379 | 72.134 | 1.182 | 4.379 | 72.134 | 1.982 | 7.341 | 64.245 |
| 7 | .913 | 3.383 | 75.517 | .913 | 3.383 | 75.517 | 1.616 | 5.986 | 70.231 |
| 8 | .882 | 3.266 | 78.783 | .882 | 3.266 | 78.783 | 1.542 | 5.710 | 75.941 |
| 9 | .712 | 2.637 | 81.420 | .712 | 2.637 | 81.420 | 1.479 | 5.479 | 81.420 |
| 10 | .575 | 2.130 | 83.550 | | | | | | |
| 11 | .513 | 1.899 | 85.449 | | | | | | |
| 12 | .464 | 1.718 | 87.168 | | | | | | |
| 13 | .454 | 1.682 | 88.850 | | | | | | |
| 14 | .389 | 1.442 | 90.292 | | | | | | |
| 15 | .376 | 1.393 | 91.685 | | | | | | |
| 16 | .304 | 1.127 | 92.812 | | | | | | |
| 17 | .292 | 1.080 | 93.892 | | | | | | |
| 18 | .268 | .991 | 94.883 | | | | | | |
| 19 | .228 | .844 | 95.727 | | | | | | |
| 20 | .226 | .838 | 96.565 | | | | | | |
| 21 | .202 | .749 | 97.314 | | | | | | |
| 22 | .183 | .676 | 97.991 | | | | | | |
| 23 | .142 | .524 | 98.515 | | | | | | |
| 24 | .129 | .476 | 98.991 | | | | | | |
| 25 | .107 | .397 | 99.387 | | | | | | |
| 26 | 9.77E-02 | .362 | 99.749 | | | | | | |
| 27 | 6.77E-02 | .251 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

**Component Matrix[a]**

| | Component | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| TA1 | -.290 | .611 | .326 | -5.1E-02 | -.209 | .300 | -2.6E-02 | .225 | 6.40E-02 |
| TA2 | -.249 | .706 | .258 | -.116 | -.191 | .159 | 4.36E-02 | .182 | .110 |
| TA3 | -.193 | .653 | .207 | -9.5E-02 | -.172 | .264 | .215 | 8.44E-02 | .285 |
| I4 | .571 | -9.8E-02 | -.255 | -.131 | .219 | -4.2E-02 | -.107 | .499 | .272 |
| I5 | .545 | -3.1E-02 | -.256 | -1.7E-02 | 3.05E-02 | -.329 | -.146 | .571 | -5.4E-02 |
| A11 | .403 | -2.0E-02 | -.471 | .258 | .114 | .351 | .412 | .137 | -.230 |
| A12 | .306 | -.176 | -.530 | .226 | -1.2E-02 | .547 | .188 | 2.89E-02 | 2.37E-02 |
| P16 | .554 | -.522 | .319 | -.131 | 4.34E-02 | 5.79E-02 | 1.22E-04 | .141 | 8.00E-02 |
| P17 | .562 | -.534 | .274 | -.221 | -2.2E-02 | .253 | 2.95E-02 | .113 | 7.19E-02 |
| P18 | .564 | -.445 | .353 | -.286 | .169 | .202 | 5.36E-02 | -.106 | -2.8E-02 |
| P19 | .543 | -.390 | .329 | -.337 | .314 | .239 | 1.88E-02 | -3.8E-02 | 2.06E-02 |
| PR22 | .347 | .498 | .176 | .295 | .647 | 2.39E-02 | -6.2E-02 | -7.8E-02 | 1.38E-02 |
| PR23 | .360 | .528 | .168 | .242 | .650 | -2.5E-02 | -4.3E-02 | -3.1E-02 | 5.55E-02 |
| AS27 | .578 | -.163 | .293 | .535 | -.260 | 5.62E-02 | -.199 | 2.02E-02 | -4.7E-02 |
| AS28 | .641 | -.199 | .289 | .518 | -.167 | -2.3E-02 | -6.2E-03 | 4.83E-02 | 6.40E-02 |
| AS29 | .632 | -.157 | .259 | .503 | -.216 | 6.59E-02 | -.110 | 1.90E-02 | 5.92E-02 |
| EOU31 | .680 | -7.2E-02 | -.291 | 1.80E-02 | -7.4E-02 | -.155 | 1.96E-02 | -.222 | .456 |
| EOU32 | .753 | .145 | -9.7E-02 | 2.93E-02 | 1.86E-03 | -.157 | .252 | -8.1E-02 | .139 |
| EOU33 | .781 | 8.96E-02 | -.181 | -.109 | -.141 | -.123 | 8.12E-02 | -.214 | .271 |
| PU34 | .715 | .250 | .110 | -.147 | -.159 | -.198 | .145 | 8.84E-03 | -.262 |
| PU35 | .732 | .254 | .149 | -6.7E-02 | -9.0E-02 | -.209 | .212 | 5.13E-03 | -.135 |
| PU36 | .822 | .212 | .109 | -7.6E-02 | -7.9E-03 | -.184 | .254 | -7.6E-03 | -.143 |
| PU37 | .813 | .135 | .185 | -9.2E-02 | -9.6E-02 | -4.2E-02 | .213 | 5.01E-02 | -.102 |
| PU39 | .828 | .216 | -.129 | -7.5E-02 | -8.9E-02 | -2.6E-02 | -4.3E-02 | -9.7E-02 | 1.74E-02 |
| AT40 | .742 | .301 | -.157 | -.193 | -7.3E-02 | .194 | -.329 | -9.4E-02 | -.134 |
| AT41 | .754 | .291 | -.216 | -.137 | -9.0E-02 | .239 | -.335 | -.128 | -5.9E-02 |
| AT42 | .783 | .285 | -.180 | -.140 | -6.1E-02 | .117 | -.311 | -3.7E-02 | -.136 |

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

**Component Transformation Matrix**

| Component | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | .578 | .367 | .442 | .354 | -.147 | .172 | .174 | .275 | .233 |
| 2 | .282 | -.499 | .282 | -.166 | .628 | .403 | -.070 | -.002 | -.041 |
| 3 | .115 | .469 | -.271 | .358 | .351 | .171 | -.529 | -.262 | -.253 |
| 4 | -.160 | -.424 | -.244 | .738 | -.129 | .304 | .274 | -.026 | -.074 |
| 5 | -.173 | .234 | -.140 | -.350 | -.276 | .819 | .067 | -.080 | .124 |
| 6 | -.392 | .377 | .291 | .048 | .412 | -.006 | .600 | -.149 | -.255 |
| 7 | .501 | .068 | -.640 | -.203 | .139 | -.058 | .464 | .129 | -.196 |
| 8 | -.027 | .048 | -.208 | .073 | .293 | -.098 | .121 | -.346 | .848 |
| 9 | -.335 | .112 | -.187 | .055 | .304 | .054 | -.124 | .831 | .190 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

**Rotated Component Matrix[a]**

| | Component | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| TA1 | -7.1E-02 | -.157 | 4.29E-02 | -1.2E-02 | .811 | 4.68E-02 | -.107 | -.221 | -6.5E-02 |
| TA2 | 5.51E-02 | -.234 | 3.44E-02 | -.114 | .797 | 7.84E-02 | -.150 | -.109 | -4.1E-02 |
| TA3 | 4.83E-02 | -.150 | -4.1E-02 | -.121 | .821 | 8.85E-02 | 6.14E-03 | .104 | -.122 |
| I4 | .114 | .277 | .197 | 2.50E-02 | -8.2E-02 | .127 | .172 | .255 | .745 |
| I5 | .332 | -2.8E-03 | .190 | .135 | -.201 | 8.69E-03 | 4.07E-02 | 2.18E-03 | .785 |
| A11 | .254 | -5.1E-03 | 7.40E-02 | 5.84E-02 | -.130 | .101 | .846 | -1.9E-02 | .111 |
| A12 | -9.7E-02 | 7.61E-02 | .204 | .111 | -.101 | -6.6E-02 | .823 | .171 | 4.69E-02 |
| P16 | .169 | .716 | 9.64E-03 | .303 | -.203 | -7.4E-02 | -2.7E-02 | 7.86E-02 | .204 |
| P17 | .133 | .801 | 9.87E-02 | .249 | -.124 | -.167 | 9.88E-02 | 7.78E-02 | .136 |
| P18 | .217 | .827 | .126 | .119 | -.197 | 3.41E-02 | 1.26E-02 | 4.72E-02 | -5.5E-02 |
| P19 | .151 | .856 | .141 | 2.24E-02 | -.156 | .149 | 2.18E-02 | 4.41E-02 | 3.06E-02 |
| PR22 | .159 | -1.0E-02 | .145 | .103 | 8.97E-02 | .921 | 3.11E-02 | 1.55E-02 | 1.71E-02 |
| PR23 | .195 | -1.1E-02 | .129 | 5.91E-02 | .119 | .918 | 1.52E-03 | 5.01E-02 | 8.15E-02 |
| AS27 | .174 | .146 | .185 | .865 | -9.5E-02 | 3.98E-02 | 3.65E-02 | 8.99E-03 | 2.82E-02 |
| AS28 | .276 | .212 | 2.18E-02 | .812 | -.116 | 9.95E-02 | 8.57E-02 | .140 | 8.55E-02 |
| AS29 | .206 | .192 | .147 | .819 | -7.1E-02 | 7.25E-02 | 9.16E-02 | .129 | 5.63E-02 |
| EOU31 | .272 | .107 | .268 | .185 | -.217 | 2.90E-02 | .110 | .750 | .159 |
| EOU32 | .603 | .116 | .176 | .171 | -6.9E-02 | .184 | .176 | .430 | .140 |
| EOU33 | .501 | .149 | .372 | .142 | -8.9E-02 | 2.25E-02 | 9.03E-02 | .604 | .100 |
| PU34 | .785 | .121 | .311 | .145 | 1.46E-02 | 4.48E-02 | -2.0E-02 | 1.15E-02 | 9.97E-02 |
| PU35 | .771 | .140 | .211 | .193 | 4.12E-02 | .141 | -3.1E-03 | .115 | .107 |
| PU36 | .808 | .208 | .225 | .172 | -2.4E-02 | .195 | 7.29E-02 | .143 | .124 |
| PU37 | .716 | .324 | .243 | .250 | 6.43E-02 | 9.70E-02 | 9.45E-02 | .116 | .124 |
| PU39 | .537 | .131 | .529 | .188 | -3.7E-02 | .125 | .122 | .316 | .148 |
| AT40 | .346 | .144 | .824 | .101 | 3.50E-02 | .123 | .102 | .105 | .116 |
| AT41 | .292 | .121 | .841 | .138 | 3.47E-02 | .122 | .161 | .190 | .103 |
| AT42 | .390 | .111 | .784 | .141 | -1.2E-02 | .140 | .107 | .113 | .193 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

# APPENDIX 4

## STRUCTURAL EQUATIONS MODELING ANALYSIS RESULT

DATE: 4/12/2000
TIME: 17:55

L I S R E L 8.30

BY

Karl G. Jöreskog & Dag Sörbom



```
 The following lines were read from file
D:\PROJECT2\PROJECT\FINAL\LISREL\RMODEL.LS8:

 Factors Affecting Internet Banking

 Observed Variables: TA1 TA2 TA3 I4 I5 A11 A12 P16 P17 P18 P19
 PR22 PR23 AS27 AS28 AS29 EOU31 EOU32 EOU33
 PU34 PU35 PU36 PU37 PU39
 AT40 AT41 AT42 FIT1

 Covariance Matrix from file stru.cov

 Sample size 167

 Latent Variables: TASKAMB INFORICH ACC PERSON PRIVACY ALLSER PEOU PU
ATTITUDE FIT

 Relationships:
 TA1=1*TASKAMB
 TA2=TASKAMB
 TA3=TASKAMB
 I4=1*INFORICH
 I5=INFORICH
 A11=1*ACC
 A12=ACC
 P16=1*PERSON
 P17=PERSON
 P18=PERSON
 P19=PERSON
 PR22=1*PRIVACY
 PR23=PRIVACY
 AS27=1*ALLSER
```

```
AS28=ALLSER
AS29=ALLSER
EOU31=1*PEOU
EOU32=PEOU
EOU33=PEOU
PU34=1*PU
PU35=PU
PU36=PU
PU37=PU
PU39=PU
AT40=1*ATTITUDE
AT41=ATTITUDE
AT42=ATTITUDE
FIT1=1*FIT

PRIVACY = PERSON
PEOU = TASKAMB INFORICH FIT ACC
PU = ACC PRIVACY PERSON ALLSER PEOU
ATTITUDE = PU

Path Diagram
Admissibility Check=Off

Set the error of FIT1 to 0.20
Set the error of PR23 to 0.20
Set the error of I4 to 0.20
Let the error of P19 and P18 correlate
Let the error of PU39 and PU36 correlate
Let the error of AT40 and AT41 correlate
Let the error of PU35 and PU34 correlate
Let the error of TA2 and TA1 correlate
Let the error of P18 and P16 correlate
Let the error of I4 and I5 correlate
Let the error of EOU33 and EOU31 correlate
End of Problem

Sample Size =   167

Factors Affecting Internet Banking

        Covariance Matrix to be Analyzed
```

| | PR22 | PR23 | EOU31 | EOU32 | EOU33 | PU34 |
|---|---|---|---|---|---|---|
| PR22 | 1.00 | | | | | |
| PR23 | 0.90 | 1.00 | | | | |
| EOU31 | 0.12 | 0.16 | 1.00 | | | |
| EOU32 | 0.36 | 0.33 | 0.60 | 1.00 | | |
| EOU33 | 0.21 | 0.24 | 0.75 | 0.73 | 1.00 | |
| PU34 | 0.26 | 0.30 | 0.45 | 0.58 | 0.65 | 1.00 |
| PU35 | 0.31 | 0.36 | 0.49 | 0.61 | 0.63 | 0.73 |
| PU36 | 0.37 | 0.41 | 0.55 | 0.72 | 0.68 | 0.77 |
| PU37 | 0.30 | 0.29 | 0.49 | 0.72 | 0.66 | 0.69 |
| PU39 | 0.32 | 0.35 | 0.61 | 0.69 | 0.79 | 0.66 |
| AT40 | 0.34 | 0.34 | 0.53 | 0.53 | 0.64 | 0.61 |
| AT41 | 0.32 | 0.31 | 0.55 | 0.58 | 0.66 | 0.55 |
| AT42 | 0.31 | 0.34 | 0.55 | 0.58 | 0.66 | 0.62 |
| TA1 | 0.13 | 0.15 | -0.44 | -0.21 | -0.22 | -0.10 |
| TA2 | 0.17 | 0.23 | -0.31 | -0.10 | -0.21 | 0.03 |
| TA3 | 0.17 | 0.23 | -0.25 | -0.09 | -0.15 | 0.00 |
| I4 | 0.18 | 0.23 | 0.44 | 0.42 | 0.47 | 0.33 |
| I5 | 0.13 | 0.14 | 0.45 | 0.47 | 0.45 | 0.42 |
| A11 | 0.16 | 0.13 | 0.32 | 0.40 | 0.34 | 0.28 |
| A12 | -0.02 | -0.04 | 0.38 | 0.25 | 0.32 | 0.10 |
| P16 | -0.01 | -0.02 | 0.38 | 0.28 | 0.35 | 0.32 |
| P17 | -0.06 | -0.11 | 0.34 | 0.32 | 0.34 | 0.32 |
| P18 | 0.05 | 0.00 | 0.32 | 0.34 | 0.37 | 0.32 |
| P19 | 0.11 | 0.14 | 0.35 | 0.30 | 0.31 | 0.33 |

| | | | | | | |
|---|---|---|---|---|---|---|
| AS27 | 0.16 | 0.11 | 0.38 | 0.37 | 0.36 | 0.36 |
| AS28 | 0.22 | 0.18 | 0.46 | 0.46 | 0.45 | 0.42 |
| AS29 | 0.18 | 0.17 | 0.44 | 0.42 | 0.43 | 0.40 |
| FIT1 | -0.01 | -0.02 | 0.55 | 0.44 | 0.48 | 0.27 |

Covariance Matrix to be Analyzed

| | PU35 | PU36 | PU37 | PU39 | AT40 | AT41 |
|---|---|---|---|---|---|---|
| PU35 | 1.00 | | | | | |
| PU36 | 0.81 | 1.00 | | | | |
| PU37 | 0.73 | 0.83 | 1.00 | | | |
| PU39 | 0.71 | 0.71 | 0.76 | 1.00 | | |
| AT40 | 0.55 | 0.62 | 0.62 | 0.73 | 1.00 | |
| AT41 | 0.55 | 0.59 | 0.59 | 0.75 | 0.89 | 1.00 |
| AT42 | 0.59 | 0.69 | 0.61 | 0.79 | 0.87 | 0.90 |
| TA1 | -0.14 | -0.18 | -0.08 | -0.17 | -0.07 | -0.08 |
| TA2 | 0.00 | -0.09 | -0.08 | -0.15 | 0.01 | -0.02 |
| TA3 | 0.02 | -0.02 | -0.05 | -0.05 | 0.02 | 0.00 |
| I4 | 0.35 | 0.42 | 0.44 | 0.44 | 0.41 | 0.43 |
| I5 | 0.45 | 0.46 | 0.45 | 0.50 | 0.41 | 0.40 |
| A11 | 0.23 | 0.35 | 0.34 | 0.39 | 0.34 | 0.36 |
| A12 | 0.15 | 0.21 | 0.21 | 0.30 | 0.28 | 0.37 |
| P16 | 0.32 | 0.43 | 0.44 | 0.30 | 0.22 | 0.23 |
| P17 | 0.32 | 0.35 | 0.49 | 0.35 | 0.27 | 0.31 |
| P18 | 0.34 | 0.40 | 0.53 | 0.40 | 0.29 | 0.31 |
| P19 | 0.35 | 0.42 | 0.44 | 0.33 | 0.33 | 0.30 |
| AS27 | 0.38 | 0.39 | 0.46 | 0.42 | 0.36 | 0.42 |
| AS28 | 0.42 | 0.52 | 0.51 | 0.43 | 0.29 | 0.31 |
| AS29 | 0.44 | 0.47 | 0.51 | 0.44 | 0.38 | 0.39 |
| FIT1 | 0.33 | 0.38 | 0.38 | 0.43 | 0.31 | 0.33 |

Covariance Matrix to be Analyzed

| | AT42 | TA1 | TA2 | TA3 | I4 | I5 |
|---|---|---|---|---|---|---|
| AT42 | 1.00 | | | | | |
| TA1 | -0.10 | 1.00 | | | | |
| TA2 | -0.09 | 0.72 | 1.00 | | | |
| TA3 | -0.05 | 0.62 | 0.64 | 1.00 | | |
| I4 | 0.45 | -0.30 | -0.25 | -0.16 | 1.00 | |
| I5 | 0.51 | -0.24 | -0.17 | -0.26 | 0.58 | 1.00 |
| A11 | 0.37 | -0.20 | -0.24 | -0.11 | 0.30 | 0.29 |
| A12 | 0.32 | -0.28 | -0.26 | -0.21 | 0.33 | 0.20 |
| P16 | 0.26 | -0.36 | -0.40 | -0.42 | 0.38 | 0.31 |
| P17 | 0.32 | -0.34 | -0.38 | -0.33 | 0.39 | 0.27 |
| P18 | 0.31 | -0.33 | -0.40 | -0.35 | 0.30 | 0.23 |
| P19 | 0.36 | -0.36 | -0.33 | -0.29 | 0.37 | 0.23 |
| AS27 | 0.39 | -0.21 | -0.26 | -0.22 | 0.23 | 0.28 |
| AS28 | 0.39 | -0.23 | -0.30 | -0.20 | 0.28 | 0.35 |
| AS29 | 0.42 | -0.22 | -0.23 | -0.22 | 0.28 | 0.32 |
| FIT1 | 0.39 | -0.71 | -0.66 | -0.68 | 0.66 | 0.71 |

Covariance Matrix to be Analyzed

| | A11 | A12 | P16 | P17 | P18 | P19 |
|---|---|---|---|---|---|---|
| A11 | 1.00 | | | | | |
| A12 | 0.59 | 1.00 | | | | |
| P16 | 0.16 | 0.16 | 1.00 | | | |
| P17 | 0.20 | 0.25 | 0.81 | 1.00 | | |
| P18 | 0.19 | 0.13 | 0.64 | 0.75 | 1.00 | |
| P19 | 0.15 | 0.20 | 0.67 | 0.72 | 0.84 | 1.00 |
| AS27 | 0.21 | 0.25 | 0.39 | 0.40 | 0.36 | 0.28 |
| AS28 | 0.29 | 0.24 | 0.47 | 0.43 | 0.39 | 0.32 |
| AS29 | 0.29 | 0.29 | 0.46 | 0.46 | 0.40 | 0.38 |
| FIT1 | 0.30 | 0.35 | 0.49 | 0.46 | 0.45 | 0.43 |

Covariance Matrix to be Analyzed

| | AS27 | AS28 | AS29 | FIT1 |
|---|---|---|---|---|
| AS27 | 1.00 | | | |
| AS28 | 0.77 | 1.00 | | |
| AS29 | 0.77 | 0.77 | 1.00 | |
| FIT1 | 0.38 | 0.41 | 0.40 | 1.00 |

Factors Affecting Internet Banking

Number of Iterations = 29

LISREL Estimates (Maximum Likelihood)

PR22 = 1.00*PRIVACY, Errorvar.= 0.015 , $R^2$ = 0.99
(0.027)
0.53

PR23 = 0.91*PRIVACY, Errorvar.= 0.20, $R^2$ = 0.80
(0.043)
20.96

EOU31 = 1.00*PEOU, Errorvar.= 0.48 , $R^2$ = 0.52
(0.062)
7.70

EOU32 = 1.15*PEOU, Errorvar.= 0.31 , $R^2$ = 0.69
(0.11) (0.044)
10.11 6.90

EOU33 = 1.21*PEOU, Errorvar.= 0.23 , $R^2$ = 0.77
(0.093) (0.040)
13.02 5.63

PU34 = 1.00*PU, Errorvar.= 0.40 , $R^2$ = 0.57
(0.044)
9.03

PU35 = 1.06*PU, Errorvar.= 0.33 , $R^2$ = 0.65
(0.080) (0.037)
13.21 8.94

PU36 = 1.21*PU, Errorvar.= 0.11 , $R^2$ = 0.87
(0.091) (0.023)
13.31 5.02

PU37 = 1.11*PU, Errorvar.= 0.25 , $R^2$ = 0.72
(0.092) (0.029)
12.17 8.71

PU39 = 1.18*PU, Errorvar.= 0.17 , $R^2$ = 0.82
(0.093) (0.028)
12.71 6.01

AT40 = 1.00*ATTITUDE, Errorvar.= 0.24 , $R^2$ = 0.74
(0.034)
7.24

AT41 = 1.04*ATTITUDE, Errorvar.= 0.17 , $R^2$ = 0.81
(0.045) (0.029)
22.99 6.00

AT42 = 1.14*ATTITUDE, Errorvar.= 0.0091, $R^2$ = 0.99
(0.062) (0.026)
18.41 0.35

```
TA1 = 1.00*TASKAMB, Errorvar.= 0.38  , R² = 0.62
                               (0.046)
                                8.41

TA2 = 1.00*TASKAMB, Errorvar.= 0.38  , R² = 0.62
      (0.072)                  (0.046)
       13.89                    8.40

TA3 = 1.02*TASKAMB, Errorvar.= 0.36  , R² = 0.64
      (0.084)                  (0.045)
       12.11                    8.04

 I4 = 1.00*INFORICH, Errorvar.= 0.20, R² = 0.80

 I5 = 1.04*INFORICH, Errorvar.= 0.13  , R² = 0.87
      (0.090)                  (0.061)
       11.53                    2.13

A11 = 1.00*ACC, Errorvar.= 0.36  , R² = 0.64
                          (0.093)
                           3.88

A12 = 0.91*ACC, Errorvar.= 0.47  , R² = 0.53
      (0.14)              (0.087)
       6.54                5.40

P16 = 1.00*PERSON, Errorvar.= 0.19  , R² = 0.81
                             (0.038)
                              5.05

P17 = 1.00*PERSON, Errorvar.= 0.19  , R² = 0.81
      (0.063)                (0.036)
       15.90                  5.18

P18 = 0.92*PERSON, Errorvar.= 0.31  , R² = 0.69
      (0.075)                (0.051)
       12.21                  6.05

P19 = 0.86*PERSON, Errorvar.= 0.41  , R² = 0.59
      (0.070)                (0.052)
       12.29                  7.84

AS27 = 1.00*ALLSER, Errorvar.= 0.24  , R² = 0.76
                               (0.039)
                                6.24

AS28 = 1.01*ALLSER, Errorvar.= 0.22  , R² = 0.78
       (0.068)                 (0.038)
        14.85                   5.89

AS29 = 1.01*ALLSER, Errorvar.= 0.22  , R² = 0.78
       (0.068)                 (0.038)
        14.84                   5.90

FIT1 = 1.00*FIT, Errorvar.= 0.20, R² = 0.80

Error Covariance for EOU33 and EOU31 = 0.11
                                       (0.040)
                                         2.88
Error Covariance for PU35 and PU34 = 0.095
                                     (0.030)
                                       3.19
Error Covariance for PU39 and PU36 = -0.15
                                     (0.019)
                                      -7.77
Error Covariance for AT41 and AT40 = 0.096
```

(0.027)
3.52

Error Covariance for TA2 and TA1 = 0.11
(0.037)
2.85

Error Covariance for I5 and I4 = -0.25
(0.057)
-4.28

Error Covariance for P18 and P16 = -0.09
(0.025)
-3.54

Error Covariance for P19 and P18 = 0.20
(0.045)
4.47

PRIVACY = - 0.0075*PERSON, Errorvar.= 0.99 , $R^2$ = 0.00
(0.089) (0.11)
-0.084 8.71

PEOU = - 0.18*TASKAMB + 0.50*INFORICH + 0.33*ACC - 0.24*FIT, Errorvar.= 0.30 , $R^2$ = 0.43
(0.097) (0.098) (0.095) (0.10) (0.064)
-1.89 5.11 3.53 -2.31 4.65

PU = 0.13*PRIVACY + 0.83*PEOU - 0.035*ACC + 0.085*PERSON + 0.074*ALLSER, Errorvar.= 0.11 , $R^2$ = 0.79
(0.032) (0.11) (0.065) (0.045) (0.050) (0.025)
4.02 7.73 -0.54 1.89 1.49 4.47

ATTITUDE = 0.89*PU, Errorvar.= 0.28 , $R^2$ = 0.61
(0.095) (0.040)
9.45 6.85

Covariance Matrix of Independent Variables

| | TASKAMB | INFORICH | ACC | PERSON | ALLSER | FIT |
|---|---|---|---|---|---|---|
| TASKAMB | 0.62 | | | | | |
| | (0.10) | | | | | |
| | 5.99 | | | | | |
| INFORICH | -0.22 | 0.80 | | | | |
| | (0.06) | (0.11) | | | | |
| | -3.54 | 7.28 | | | | |
| ACC | -0.21 | 0.29 | 0.64 | | | |
| | (0.07) | (0.07) | (0.13) | | | |
| | -3.13 | 4.11 | 4.80 | | | |
| PERSON | -0.38 | 0.31 | 0.21 | 0.81 | | |
| | (0.07) | (0.07) | (0.07) | (0.11) | | |
| | -5.24 | 4.42 | 3.02 | 7.20 | | |
| ALLSER | -0.23 | 0.28 | 0.30 | 0.43 | 0.76 | |
| | (0.07) | (0.07) | (0.07) | (0.08) | (0.11) | |
| | -3.56 | 4.10 | 4.13 | 5.56 | 6.88 | |
| FIT | -0.68 | 0.67 | 0.34 | 0.47 | 0.37 | 0.80 |
| | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) | (0.11) |
| | -7.40 | 7.37 | 4.24 | 5.68 | 4.79 | 7.29 |

Covariance Matrix of Latent Variables

| | PRIVACY | PEOU | PU | ATTITUDE | TASKAMB | INFORICH |
|---|---|---|---|---|---|---|
| PRIVACY | 0.99 | | | | | |
| PEOU | 0.00 | 0.52 | | | | |
| PU | 0.13 | 0.45 | 0.53 | | | |
| ATTITUDE | 0.11 | 0.41 | 0.48 | 0.70 | | |
| TASKAMB | 0.00 | -0.13 | -0.15 | -0.14 | 0.62 | |
| INFORICH | 0.00 | 0.37 | 0.35 | 0.31 | -0.22 | 0.80 |
| ACC | 0.00 | 0.31 | 0.28 | 0.25 | -0.21 | 0.29 |
| PERSON | -0.01 | 0.18 | 0.25 | 0.22 | -0.38 | 0.31 |
| ALLSER | 0.00 | 0.19 | 0.24 | 0.22 | -0.23 | 0.28 |
| FIT | 0.00 | 0.38 | 0.37 | 0.33 | -0.68 | 0.67 |

Covariance Matrix of Latent Variables

| | ACC | PERSON | ALLSER | FIT |
|---|---|---|---|---|
| ACC | 0.64 | | | |
| PERSON | 0.21 | 0.81 | | |
| ALLSER | 0.30 | 0.43 | 0.76 | |
| FIT | 0.34 | 0.47 | 0.37 | 0.80 |

Goodness of Fit Statistics

Degrees of Freedom = 319
Minimum Fit Function Chi-Square = 848.56 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 718.53 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 399.53
90 Percent Confidence Interval for NCP = (325.58 ; 481.21)

Minimum Fit Function Value = 5.11
Population Discrepancy Function Value (F0) = 2.41
90 Percent Confidence Interval for F0 = (1.96 ; 2.90)
Root Mean Square Error of Approximation (RMSEA) = 0.087
90 Percent Confidence Interval for RMSEA = (0.078 ; 0.095)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 5.38
90 Percent Confidence Interval for ECVI = (4.93 ; 5.87)
ECVI for Saturated Model = 4.89
ECVI for Independence Model = 30.18

Chi-Square for Independence Model with 378 Degrees of Freedom = 4953.88
Independence AIC = 5009.88
Model AIC = 892.53
Saturated AIC = 812.00
Independence CAIC = 5125.19
Model CAIC = 1250.80
Saturated CAIC = 2483.91

Root Mean Square Residual (RMR) = 0.11
Standardized RMR = 0.11
Goodness of Fit Index (GFI) = 0.76
Adjusted Goodness of Fit Index (AGFI) = 0.70
Parsimony Goodness of Fit Index (PGFI) = 0.60

Normed Fit Index (NFI) = 0.83
Non-Normed Fit Index (NNFI) = 0.86
Parsimony Normed Fit Index (PNFI) = 0.70
Comparative Fit Index (CFI) = 0.88
Incremental Fit Index (IFI) = 0.89
Relative Fit Index (RFI) = 0.80

Critical N (CN) = 75.47

The Modification Indices Suggest to Add the

| Path to | from | Decrease in Chi-Square | New Estimate |
|---|---|---|---|
| EOU32 | PRIVACY | 15.2 | 0.20 |
| PU37 | ATTITUDE | 10.1 | -0.25 |
| PU39 | ATTITUDE | 20.6 | 0.41 |
| FIT1 | PERSON | 10.6 | 0.99 |
| FIT1 | ALLSER | 20.1 | 1.38 |
| PRIVACY | PEOU | 14.7 | 0.46 |
| PRIVACY | PU | 16.4 | 0.59 |
| PRIVACY | ATTITUDE | 9.1 | 0.33 |
| PEOU | PRIVACY | 9.2 | 0.15 |
| PEOU | PU | 15.6 | 0.85 |
| PRIVACY | TASKAMB | 7.9 | 0.32 |
| PRIVACY | ALLSER | 10.4 | 0.37 |
| PEOU | PERSON | 10.6 | 0.24 |
| PEOU | ALLSER | 20.1 | 0.33 |
| PU | TASKAMB | 8.9 | 0.14 |
| ATTITUDE | INFORICH | 8.4 | 0.15 |

The Modification Indices Suggest to Add an Error Covariance

| Between | and | Decrease in Chi-Square | New Estimate |
|---|---|---|---|
| PEOU | PRIVACY | 9.3 | 0.14 |
| PR23 | PR22 | 10.2 | 0.35 |
| PR23 | PR23 | 10.2 | -0.12 |
| EOU32 | PR22 | 14.7 | 0.09 |
| PU37 | EOU32 | 8.7 | 0.07 |
| AT41 | PU36 | 15.6 | -0.05 |
| AT42 | PU36 | 13.7 | 0.05 |
| AT42 | PU37 | 18.5 | -0.06 |
| AT42 | PU39 | 13.6 | 0.05 |
| TA1 | EOU31 | 15.2 | -0.12 |
| TA1 | EOU33 | 9.3 | 0.07 |
| TA1 | PU37 | 11.1 | 0.08 |
| TA2 | AT42 | 10.9 | -0.05 |
| I4 | I4 | 18.3 | 2.01 |
| I5 | AT41 | 12.1 | -0.05 |
| I5 | AT42 | 20.6 | 0.07 |
| A12 | AT41 | 10.0 | 0.07 |
| A12 | A11 | 17.7 | 1.43 |
| P16 | PU36 | 15.2 | 0.07 |
| P16 | TA3 | 8.7 | -0.07 |
| P17 | PU36 | 18.9 | -0.07 |
| P17 | A12 | 8.3 | 0.09 |
| P18 | PR23 | 8.0 | -0.05 |
| P18 | AT42 | 12.4 | -0.05 |
| P18 | TA1 | 8.7 | 0.06 |
| P18 | A12 | 13.0 | -0.11 |
| P19 | PR23 | 16.3 | 0.07 |
| P19 | AT41 | 8.0 | -0.04 |
| P19 | AT42 | 10.3 | 0.05 |
| P19 | TA1 | 9.2 | -0.07 |
| P19 | A12 | 8.4 | 0.09 |
| AS27 | AT41 | 15.9 | 0.07 |
| AS28 | AT41 | 9.8 | -0.05 |

The Problem used 139704 Bytes (= 0.2% of Available Workspace)

Time used: 2.133 Seconds

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